



41010NE0049 63.3703 CUNNINGHAM

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PROGRESS REPORT
FOR
GRANDORA EXPLORATIONS LTD. (N.P.L.)
FOR THE
PERIOD OF DECEMBER 25, 1974 TO JANUARY 24, 1975
ON THE
SHUNSBY PROPERTY, CUNNINGHAM TOWNSHIP, ONTARIO

January 25, 1975
Vancouver, B.C.

F. Holcapek, P. Eng.
Geologist



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INTRODUCTION:

All work programs had been terminated by December 21, 1974, and re-started January 2, 1975.

On January 3, 1975, the diamond drill crew moved back on the property and drilling resumed.

Work completed during the past period consisted of:

1. Preparations of drill sites on the main zone and south zone.
2. Continuation of diamond drilling on the main zone, Grandora # 1.
3. Starting of diamond drilling on the south zone, Grandora # 2.

Major delays were caused by a high turn over of diamond drillers and helpers, which resulted in complete stoppage of drilling and a loss of three 12 hour working shifts.

Minor delays were caused by machinery breakdown, muskeg, John Deer

tractor, drill pump and drill Grandora # 2.

The bulldozer has been retained on a standby basis to keep the access road clear and to prepare drill sites. The verbal agreement calls for a minimum of 25 hours per week at \$ 45.00 per hour, plus \$ 100.00 per week for the operator.

1. DIAMOND DRILLING:

GRANDORA # 1 - MAIN ZONE:

DDH 74 - 4:

This drill hole was completed before Christmas, but since the drill logs and intersections were not available, it has only been partially described in the Progress Report for the period December 1 to December 24, 1974.

Started: December 6, 1974; completed: December 17, 1974.

Vertical: Total depth: 275 feet.

Location: 8+25 N, 4+55 W.

Purpose: To intersect the apparently offset mineralization encountered in DDH 74-25, 24, 75 and 70 to the east.

Results: The drill hole started in variolitic tuffs and stayed in tuffs agglomerates and minor flows of dacitic to andesitic composition to 202 feet.

From 202 to 250 feet, a section consisting of argillites, cherts and chert breccia, heavily pyritized, carrying minor chalcopyrite and sphalerite, was intersected.

2.

This section correlates with the chert section encountered in DDH 74 - 3 and DDH 74 - 5 at about 259 feet.

Assays: 218 - 250 feet, 32 feet less than 0.05% copper, less than 0.10% zinc.

DDH 74 - 10: Started: January 6, 1975; completed: January 11, 1975.

Bearing: 115°, at - 45°; total depth: 263 feet.

Location: 10+00 N, 8+75 W.

Purpose: The purpose of this drill hole was to check the mineralization along the N 20° W trending fault intersected in 74 - 2 and to the east of the fault.

Results: This drill hole started in an andesite tuff sequence. The andesites show weak chloritization and in places strong silicification.

Carbonate veinlets, containing pyrite, cut the core at 60°.

Much alteration

From 110 to 167 feet the alteration is most intense. Brecciation, signs of forceful injections of carbonates and dykes, is abundant to 153 feet.

From 153 to 167 feet the volcanics are completely altered to a grey, highly silicious, nearly rhyolitic rock type.

From 178 to 259 feet, an interbedded sequence of chert, breccia, tuffs and minor argillites were intersected. The hole was stopped in andesites at 263 feet.

Significant mineralization but not ore.

Assays:	<u>Interval in feet</u>	<u>Feet</u>	<u>Cu/%</u>	<u>Zn/%</u>
	178 - 203	25	0.544	2.432
	217 - 254	37	1.174	1.501
	217 - 259	42	1.036	1.3224
	178 - 254	76	0.778	1.44
	178 - 259	81	0.730	1.35

DDH 74 - 12: Started: January 15, 1975; completed: January 18, 1975.

Bearing: 115°, at - 45°; total depth: 255 feet.

Purpose: To check the northward extension of mineralization laying east of the fault encountered in DDH 74 - 2.

Results: The drill logs have not been received, hence no results are available.

According to information received over the telephone the drill hole entered the chert - chert breccia sequence at 167 feet. Samples have been submitted for assaying.

2. GRANDORA # 2 - SOUTH ZONE:

DDH 74 - 9: Started: January 6, 1975; completed: January 8, 1975.

Bearing: Vertical; total depth: 273 feet.

Location: 1+90 S, 5+80 E.

Purpose: To check the northern extension of the mineralization intersected in DDH 68 - 18 and DDH 68 - 20.

Results: The hole passed through 12 feet of overburden and intersected the middle chert sequence to 71 feet. The rocks are mainly cherts and chert breccia. Sulphides intersected are erratic and consist of pyrite, minor pyrrhotite, chalcopyrite and sphalerite.

From 71 to 163 feet tuffs and breccia were intersected. The tuffs are welded in places and are of dacitic to andesitic composition, and are cut by fine grained dark grey dyklets showing evidence of forceful injections. Minor finely disseminated pyrite, pyrrhotite, possibly chalcopyrite and sphalerite have been observed in the matrix of the dyke.

From 163 to 218 feet the basal chert unit was encountered. The unit consists of fine grained, black sediments containing sections of up to 30% sulphides, pyrite, pyrrhotite, minor chalcopyrite and sphalerite, interbedded with dacite tuffs and chert breccia. Sulphides, associated with the tuffs and cherts, occur as blebbs, bands, fracture filling or disseminations.

Two beds of sediments, the first 7 feet thick, consisting of dark to black fine grained argillites containing sulphides as bands, the second a 3 foot thick chert band carrying minor sulphides, were interbedded with welded tuffs from 218 - 264 feet. The hole stopped in andesite tuffs changing to flows at 273 feet.

Assays: The best sections encountered were:

<u>Interval in feet:</u>	<u>Feet:</u>	<u>%Cu:</u>	<u>%Zn:</u>
208 - 214	7	0.10	3.36
178 - 218	40	0.09	1.00

DDH 74 - 11: Started: January 11, 1975; completed: January 17, 1975.
 Bearing: 115^o, at - 45^o; total depth: 504 feet.
 Location: 3+00 S, 1+20 E.
 Purpose: The hole was located to check on the southeastern extent of mineralization encountered in DDH 61 and DDH 62.

Inspection of core of DDH 61 showed that it was completely oxidized. It was nearly impossible to identify the rock types intersected.

Results: From 11 to 118 feet, the drill hole intersected a sequence of interbedded chert, chert breccia, black fine grained argillites, dacite and rhyolite tuffs. Sulphides occur as disseminations within the breccia, as bands and fracture filling within the tuffs and as thin beds of nearly massive pyrite and pyrrhotite within the argillites.

The sulphide beds appear to be concordant with the bedding and crudely zoned, i. e. individual alternating beds of pyrite, pyrrhotite, minor chalcopyrite and sphalerite separated by barren argillite.

From 118 to 151 feet a dark, grey, fine grained tuff containing varied amounts of sulphides as disseminations and fracture fillings were intersected. The chert unit interbedded with tuffs from 151 to 186 feet is part of the middle cherts. This is the first drill hole showing a 31 foot section separating the chert units.

The main volcanic flow - tuff horizon separating the middle cherts from the basal cherts was intersected from 186 to 399 feet. The units consist of more than 50% dacite tuffs, carrying minor sulphide mineralization. Minor injection features associated with small grey dyklets have been observed.

The basal chert unit intersected from 399 to 492 feet consists of interbedded black argillites, cherts and tuffs. The chert unit is only 20 feet thick and forms the base. The argillites are interbedded with minor beds of dacite and rhyolite tuffs.

The best mineralization is associated with the black argillites. It consists of bedded pyrrhotite, pyrite, sphalerite and chalcopyrite, or is finely disseminated within the argillites. Bedding is apparent within the sulphide rich section.

At 424 feet the rock intersected consists of a mixture of tuffs, argillites, and chert fragments. The zone appears to have been brecciated, but this could also be a slump feature caused by movement before consolidation of the sediments. Andesite tuffs and flows were intersected at the bottom of the hole. The contact between the units is gradational.

Assays:	<u>Interval in feet</u>	<u>Feet</u>	<u>%/Cu.</u>	<u>%/Zn.</u>
	82 - 112	30	0.12	3.22
	82 - 118	36	0.10	2.96
	151 - 176	25	0.11	2.10
	151 - 186	35	0.19	1.65
	399 - 424	25	0.43	3.74
	470 - 492	22	0.72	2.65
	399 - 492	93	0.31	1.76

DDH 74 - 13: Started: January 20, 1975; completed: January 23, 1975.

Bearing: 115^o, - 45^o; total depth: 458 feet.

Location: 1+85 S, 1+40 E.

Purpose: The hole is located approximately 100 feet north of DDH 74 - 11 with the object to test the extension of the black argillite - sulphide horizon.

Results: The drill log has not been received as of date. From verbal communication, the drill hole started in the chert - argillite sequence interbedded with minor dacite tuffs, welded tuffs and cut by minor intrusive acidic dykes.

From 47 to 157 feet sulphides consisting of pyrite, pyrrhotite, chalcopyrite and sphalerite occurring as bands, disseminations or breccia fillings were intersected. The best mineralization is associated with black sediments and cherts from 102 to 157 feet.

From 157 to 314 feet the tuff - volcanic flow unit was encountered. No sulphides were noted.

From 314 to 421 feet the basal cherts, a mixed sequence of black sediments, chert, chert - breccia and minor tuffs were intersected. The best mineralization is associated with the black sediments at 376 feet, consisting of up to 60% sulphides.

The assumed basement flows occur from 421 feet to the end of the hole.

Assays: No assay results are available, but from visual estimates good assays are anticipated from 102 to 157 feet, and 360 to 382 feet.

DDH 74 - 14:

The drill hole has been started but waterline trouble caused stoppage of drilling.

Location: 4+00 S, 3+25 E approximately
Bearing: 115°; at - 45°.
Results: No results are available.

DDH 74 - 15:

Proposed
Location: 3+00 S, 3+00 W.
Purpose: The purpose for this hole is twofold. First, to check the western extension of the zone intersected in DDH 74 - 11, and second, to test a magnetic and Turam E.M. anomaly indicated just north of a good copper - zinc geochemical anomaly.
Results: The drill rig is being moved to the location at this time.

Total footage drilled to date: 3,404 ft.

3. DISCUSSION OF DRILL RESULTS:

Main Zone:

Since initiation of the current drill program a total of 10 diamond drill holes have been completed.

The first 8 drill holes were drilled at - 90°, the last 2 drill holes at a bearing of 115° at - 45°.

The results of this drill program indicate a zone of chert breccia and banded chert interbedded with minor argillites carrying chalcopyrite, sphalerite and pyrite mineralization associated with near vertical fractures, as bands, breccia healing and as disseminations. }

*

The zone is bounded by N 20° E trending faults along the eastern and western boundaries. The displacement along the faults is not known. The rock units intersected suggest step faulting with the western block dropped down for an apparent minimum distance of 100 to 120 feet. The horizontal displacement is not known. In general, from the study of the drill logs, a possible left hand displacement is apparent.

A N 45° to 75° E trending regional fault zone producing horse tailings over 200 foot wide zone between lines 6+00 N and 8+00 N where a change of strike is evident, compounds the geological setting. Movement along this fault appears to be in the order of 900 feet horizontal and a minimum of 200 feet vertical.

The indicated average thickness of the mineralization in the chert horizon, based on 18 diamond drill holes, is 57.8 feet having an average grade of 1.00% copper and 1.20% zinc.

The depth of the mineralization varies from the surface to 100 feet below surface. The zone appears to have an average width of 270 feet between the faults and has been traced along strike for approximately 550 feet. It has not been delineated.

Several good grade copper intersections have been encountered approximately 400 feet west, or down dip from the drilled off

area. More fill in drilling is recommended to trace the extent of this copper zone.

Geological data accumulated suggests that the mineralized zone is possibly a breccia zone associated with a volcanic event, but further data is needed to confirm this interpretation.

South Zone:

Drilling completed on the South zone consisted of DDH 74 - 9, 11, 13, and 14, the latter under progress. The geological setting of this zone is different from the main zone.

The chert horizons encountered are less than 30 feet thick, brecciated and normally overlay the volcanic flows or tuffs. The cherts in turn are overlain by black argillites interbedded with dacite to rhyolite tuffs.

Two horizons consisting of interbedded cherts, argillites and tuffs are separated by up to 150 feet of dacite tuffs, welded tuffs and flows (volcanic). Sulphides consisting of pyrite, chalcopyrite and sphalerite, interbedded with black argillites and in sections up to 20 feet thick of nearly massive sulphides, differ from mineralization encountered in the main zone. The cherts and interbedded tuffs carry sulphides as blebbs, stringers, bands and disseminations.

Mixed breccia of black argillite, exhibiting bedded sulphides, and tuffs suggest slump deposition.

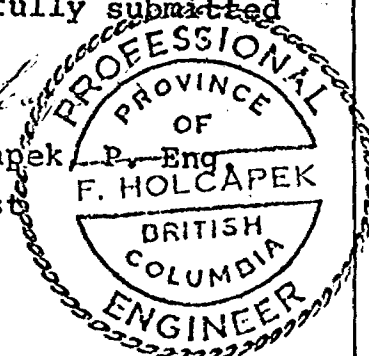
4. RECOMMENDATION:

The results of the initial drill holes from the south zone suggest a volcanogenic environment favourable to massive sulphide mineralization associated with argillites. Geological evidence obtained from the drill core suggests that the

present drilling is located along the fringe of a volcanic centre. It is imperative at this stage of the drill program to clarify the geological setting by step out drilling to locate the position of the volcanic centre and hence the geologically most favourable area for massive sulphides.

Respectfully submitted

F. Holcapek
F. Holcapek P. Eng
Geologist



January 25, 1975
Vancouver, B.C.



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SUMMARY REPORT
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- C. Assay sheets of Diamond Drill Holes 74-1 to 74-21.
- D. Diamond Drill Hole Sections.
- E. Structure Contour Map with Drill Hole Location.

I
SUMMARY REPORT
on the
SHUNSBY PROPERTY, CUNNINGHAM TOWNSHIP, ONTARIO
for
GRANDORA EXPLORATIONS LTD.

SUMMARY

The Shunsby Property of Grandora Explorations Ltd., consisting of 10 patented, 10 leased and 29 staked mineral claims, is located within Cunningham Township, Ontario.

From 1954 to 1971 the property has been explored by different interests. During this period prospecting, trenching, geophysical surveys, followed by about 60,000 feet of diamond drilling, was completed and centred on claim 34947.

From September 1974 to March 1975 Grandora Explorations Ltd. conducted a program of geochemical sampling, bulldozer trenching, and 7,444 feet of diamond drilling.

The Shunsby Property is underlain by Keewatin-type basic volcanics and a possibly younger sedimentary unit, the Rideout Series.

The Sedimentary unit has been closely folded along northerly trending axis on a regional scale.

The rock units have been cut by northerly and easterly trending major faults with apparent right-hand movement.

Structure-contour maps using the base of the Middle and Lower Cherts, part of the Rideout series, as datum suggest the rock units have been drag folded, with north-westerly trending axis and a westerly plunge at 25°. Maximum amplitude of fold

interesting.

700' displacement @ Sand of Main One block

II

structures as indicated is 40 to 60 feet with wave lengths in the order of 200 feet.

Mineralization within the Main zone is localized within ^{the} brecciated cherts as disseminations and fracture filling.

^{Basal} In the South zone the mineralization occurs in brecciated cherts as fracture filling and dissemination and as bedded and banded massive sulfides within argillaceous tuffs and argillites.

The spatial distribution of the argillite within the South zone suggests a sedimentary basin in both the Middle and Basal cherts in which sulfides were deposited. *A new concept.*

Chalcopyrite-Sphalerite breccia within an argillaceous matrix suggest slumpage after deposition of the sulfides.

Total drill indicated and drill ^{"range" or "varying between"} probable ore in the Main and South zone is 750,900 tons (grading) .27 to 1.00% Cu, 1.50 to 3.17% Zn and 848,160 tons (grading) .58 to 1.00% Cu, 1.20 to 2.48% Zn respectively. *This VERY low for Main zone*

Of this drill indicated ore approximately 1.16 million tons are possibly mineable by open pit.

Both the Main and South zones have not been completely delineated. *and the WEST FLANK of ANTICLINE/SYNCLINE totally ignored save for two TIM D.D.H.*

The Tower and West zones are within a similar geological setting and have been investigated by minor diamond drilling. Sphalerite and chalcopyrite mineralization has been found in both areas and warrant further work.

III

CONCLUSIONS

Work to date outlined on the Shunsby Property drill indicated and drill possible ore of about 1,599,000 tons, two-thirds of this tonnage ammendable to open pitting. Additional mineralization of ore grade is indicated along the western portion of the Main zone at depths of 400 to 600 feet below surface.

The extension of the South zone mineralization is *or fault displaced?* faulted off.

The Tower and West Zone need additional exploration to establish the ore potential of the area.

? unclear
From data available it appears that the sedimentary units have been dragfolded and the best ore is concentrated along the crestal regions of anticlines. The type of mineralization encountered and the change within the stratigraphy of the sedimentary units from cherts to cherts-argillites to argillites suggest a sedimentary basin deepening towards the southwest of the South zone. Sedimentary structures and structures observed within the mineralization in drill-core suggest that the mineralization is of volcanogenic origin of the distal type.

Interesting and new. Planned to further check

RECOMMENDATION

1. Geological remapping of the whole property with special emphasis on variations within the volcanic sequence and structural setting.
2. Line cutting or re-establishing of lines over the whole claim group.
3. Magnetic and Turam survey over the northern and western part of the property.

of low fuel value. Preferably limited drilling on north & grid drilling of S & S.W.

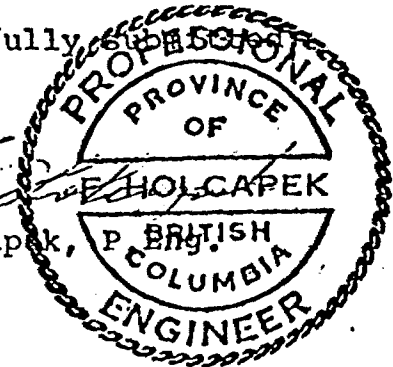
IV

4. Test drilling of coinciding anomalies from above surveys.
5. Diamond drilling of western extension of Main zone and South zone.

*OK
But will be costly
since in further
holes will be
1000 to 1500' deep.*

Respectfully,

F. Holcapek,



April 8, 1975

Vancouver, B.C.

Vegetation in the area consists of pine and spruce forests with heavy brush undergrowth. Lakes and low swampy areas are lined by thick willow growth or swamp cedar.

Summers in the area are normally dry and warm. Winter temperatures drop as low as 40° Fahrenheit. Snow cover is usually four to five feet.

PROPERTY

Patented Claims:

<u>Claim No.</u>	<u>Parcel No.</u>	<u>Claim No.</u>	<u>Parcel No.</u>
S 34944	11110	S573539	18414
S34945	11111	S57540	18413
S34946	11112	S57541	18412
S34947	11113	S57542	18411
S43946	15413	S57543	18410
S43947	15414	S57544	18409
S43948	15945	S57585	18420
S57536	18417	S61828	18420
S57537	18416	S61829	18419
S57538	18415	S61830	18418

Leased Claims:

<u>Claim No.</u>	<u>Mining Lease Number</u>	<u>Parcel No.</u>	<u>Registered Number</u>
S90411	100921	742 LSWS	1717 LSWS
S90412	100920	739 LSWS	1714 LSWS
S90413	100919	740 LSWS	1715 LSWS
S90414	100918	741 LSWS	1716 LSWS
S90415	100917	743 LSWS	1718 LSWS

<u>Claim No.</u>	<u>Mining Leases Number</u>	<u>Parcel No.</u>	<u>Registered Number</u>
S121596	102273	912 LSWS	278780
S121597	102274	903 LSWS	278781
S121598	102270	904 LSWS	278782
S147117	102272	905 LSWS	278783
S147118	102271	906 LSWS	278784

Staked Claims

Unpatented mining claims S388970 to 388980, both inclusive.
Staked mineral claims tag numbers 392907 to 392926, both in-
clusive, recorded October 11, 1974.

Licence of Occupation

Licence of Occupation No. 13525, dated February 8, 1963,
comprising those parts of claims S57542, S57543 and S57544,
covered by the waters of Edwards Lake, comprising 23.32 acres.
Total acreage is about 1650 acres.

HISTORY

From 1954 to 1971 the property has been explored by prospecting,
trenching, geological survey, magnetic and electromagnetic
surveys and 45,000 to 50,000 feet of diamond drilling. Most
of the early diamond drilling consisted of shallow holes and
was guided by known geological data and hence inconclusive.
Further, it is apparent from the available data plan that
the drill holes were located at random in respect to bearing,
dip and location; hence geological information obtained cannot
be correlated. Sheridan Geophysics conducted a Magnetic and
Electromagnetic survey over claims 34944, 45, 46, and 47 and
portions of 57538 and 39 during 1961.

This survey was followed by a more detailed magnetic and Turam EM survey by Seigel and Associates in 1965. Following the recommendations of the report covering the survey a diamond drill program was initiated in 1965 and completed in 1966. A total of 14,279 feet were drilled. This program was centered on claim 34947, the main mineralized area.

During 1968 a further 9,294 feet of diamond drilling in 20 holes on claim 34947 was completed. The purpose of this program was to trace the main mineralized zone to greater depths and along the strike.

During the period of September 1974 to March 1975 Grandora Explorations Ltd. completed a program consisting of geochemical sampling, trenching and diamond drilling.

GEOLOGY

Cunningham Township and adjacent areas were mapped by V.L. Meen in 1941 and the geology described in Ontario Department of Mines Publication Vol. 51, Part 7, and the accompanying Geological Map 51 F.

The Township is underlain by Precambrian rocks, chiefly Keewatin-type basic volcanics locally intercalated with narrow bands of rhyolites, trachytes, dacites, pyroclastics and sedimentary rocks.

A possibly later sedimentary sequence, referred to as the Ridout Series, consisting of conglomerates, quartzites, iron formation and cherts overlies the Keewatin Volcanics within the central part of the Township.

Granitic and basic intrusions as stocks and dykes cut both the volcanics and the sedimentary units.

The Keewatin Volcanics and the Ridout Series have been closely folded and observed dips vary from moderate to steep.

The most prominent fault direction is in a northerly direction.

Local Geology

The property has been mapped at a scale of 1" = 100 feet in the area of mineralization during 1965 and 1966.

It was found that although the general outcrop positions, where marked on the map area, are reliable, large numbers of huge boulders have been taken for outcrops, specifically in the southern portion of detailed mapping and naming of rock types is inconsistent.

Stratigraphy

Intrusives

Quartz feldspar porphyry dykes and sills, diorite dykes, andesite dykes, feldspar porphyry dykes, sills and stocks, ultrabasic dykes and stocks.

Ridout Series(?)

Upper Chert: Banded chert, chert breccia interbedded with minor argillites, greenstone, dark green massive with minor tuffs 40 to 60 feet thick.

Middle Chert: Banded chert, chert breccia, argillaceous tuffs, chrystal tuffs and argillites or silicified greywacke, 150 to 200 feet thick, andesite, tuff and greenstone with minor diorite (?) dacite, up to 200 feet thick.

654

Variable.

A "Key" marker

Basal Chert: Banded chert, chert breccia and silicious argillites and minor tuffs of variable thickness, but in general 60 to 150 feet thick.

Keewatin Volcanics:

Diorite, greenstone, tuffs and porphyritic andesite referred to as the "Basement."

Structural Geology

Geological surface mapping in the early development stage was mainly concerned with mapping of rock types; hence no structural information, except for the large north and westerly trending fault zones, was obtained.

All structural information was obtained from study of drill logs and structure-contour maps of the base of the middle cherts. The latter lies within a bedding fault separating the sedimentary unit from the "Basement."

Location and trend of fault or shear zones is based mainly on diamond drill data. Magnitude of movement could not be ascertained in most cases.

Faulting

Numerous faults or shears have been intersected in drill holes. The major directions are:

North to N 20° W:

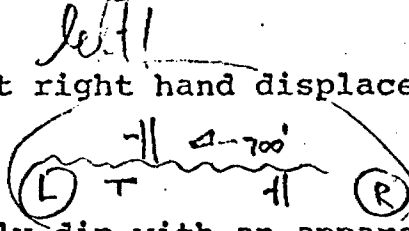
This trend is the most important in the region. It forms the eastern contact between the sedimentary sequence and the Keewatin Volcanics. The magnitude and direction of movement is not known. From regional data it appears to be normal faulting

with right lateral movement. Drilling in the main zone suggests a minimum vertical displacement of about 120 feet. The indicated dip is in the order of 45° to 70° E.

N 60 E to N 80 E:

This fault has been intersected in numerous drill holes and terminates the Main Zone. It appears to consist of several parallel trending faults forming a zone up to 200 feet wide.

Surface mapping suggests an apparent right hand displacement in the order of 500 to 800 feet.



Drill hole data indicates a southerly dip with an apparent vertical displacement of about 100 feet.

N 30 W to N 50 W:

This fault zone is indicated by topography, magnetic data and was intersected in two drill holes at the same depth. It has an apparent southerly dip of unknown magnitude, and where intersected in drill holes strikes N 30 W.

N to N 30 E:

Numerous faults belonging to this set are indicated in the vicinity of the main zone.

In general they appear to form individual blocks approximately 150 to 200 feet wide. From drill hole data a possible horst-graben type structure is indicated.

Bedding Faults

Two bedding faults are indicated by diamond drill data. The first occurs along the contact between the Keewatin Volcanics

and the overlaying basal cherts. Its position can vary from the contact to 30 feet above the contact, but normally the bottom 40 feet of the cherts are strongly sheared and deformed. Maximum deformation occurs within the argillite section of this unit.

The second is not as well expressed as the first. It occurs along the base of the middle chert. Where observed it nearly always cuts the argillites. The expression of this fault within the chert could be more intensive brecciation.

Both faults show evidence of folding and are possibly caused by slippage of incompetent rock units over the more competent volcanics.

Graphite has been found with all fault structures.

Folding

Regional mapping of the Cunningham Township shows tight folding with northerly trending axis.

In the South Zone the Ridout series strikes approximately N 20 W and dips at 25 to 45 W. To help drill data interpretation, cross-sections have been constructed, but it is apparent that projection of rock units more than 100 feet was impossible without postulating intervening faults. A structure-contour map was constructed using the base of the middle and lower chert (bedding fault) in the area of high density drilling to clarify the attitude of the rock units and indicate possible folding, drag folding, or faulting.

The structure-contour map outlined an area intensively drag folded. Amplitude of individual folds varies between 40 to 60 feet with wave lengths normally in the order of 150 to 200 feet.

Structures observed in Drill Core

a) Faulting and Folding

In the banded chert small scale asymmetric folding has been frequently observed. Pronounced thickening within the crestal region associated with microbrecciation and fracturing is common; fractures can develop into faults following the axial plane having apparent off sets in the order of 1 to 2 inches. In several cases the crestal region is elongated parallel to the fracture but not cut by the fracture.

b) Brecciation in sediments

Two types of breccia have been observed. The first consists of angular chert fragments having sharp boundaries in the cherty matrix, or of cherty fragments showing an alteration halo.

The second type consists of a random mixture of chert, argillite, tuffs and occasionally sulfide fragments in an argillecous matrix. This type has the appearance of slumpage or of a turbidity current deposit.

c) Brecciation in Volcanics

Breccia zones (where observed) in the volcanics are usually narrow and completely silicified and can contain chert and argillite fragments in the vicinity of the contact.

Numerous narrow dark grey dyklets cut the volcanics in the vicinity of brecciation having the appearance of silicified argillites. The surrounding volcanics have been altered to a highly silicious tan-colored rock with or without cubic pyrite.

d) Fracturing and Shearing

Fracturing and shearing observed has variable attitudes to the core. Calcite and quartz healing is common within the volcanics. Minor chalcopryrite and sphalerite can occur as fracture filling.

MINERALIZATION

All known mineralization is associated with the brecciated chert horizon, argillaceous tuffs or argillites.

Four distinct types of mineralizations have been recognized:

1. Bedded massive sulfides consisting of chalcopryrite, sphalerite or chalcopryrite, sphalerite and pyrite, or pyrite and minor pyrrhotite. The sulfides occur as alternating beds or bands with some cross cutting sulfide veinlets.
2. Chert breccia containing chalcopryrite, pyrite and sphalerite as disseminations or fracture filling. The pyrite can be as coarse crystalline cubes or as fine massive stringers.
3. Chert breccia or argillites containing pyrite and pyrrhotite with minor magnetite. Total sulfide content varies from 5% to 50%. This type usually occurs near fault or shear zones.
4. Calcite and quartz veinlets carrying minor galena and sphalerite.

5. Sulfide breccia consisting of chalcopyrite fragments in an argillite matrix carrying variable amounts of sphalerite.

AREAS OF MINERALIZATION

1. Tower Group:

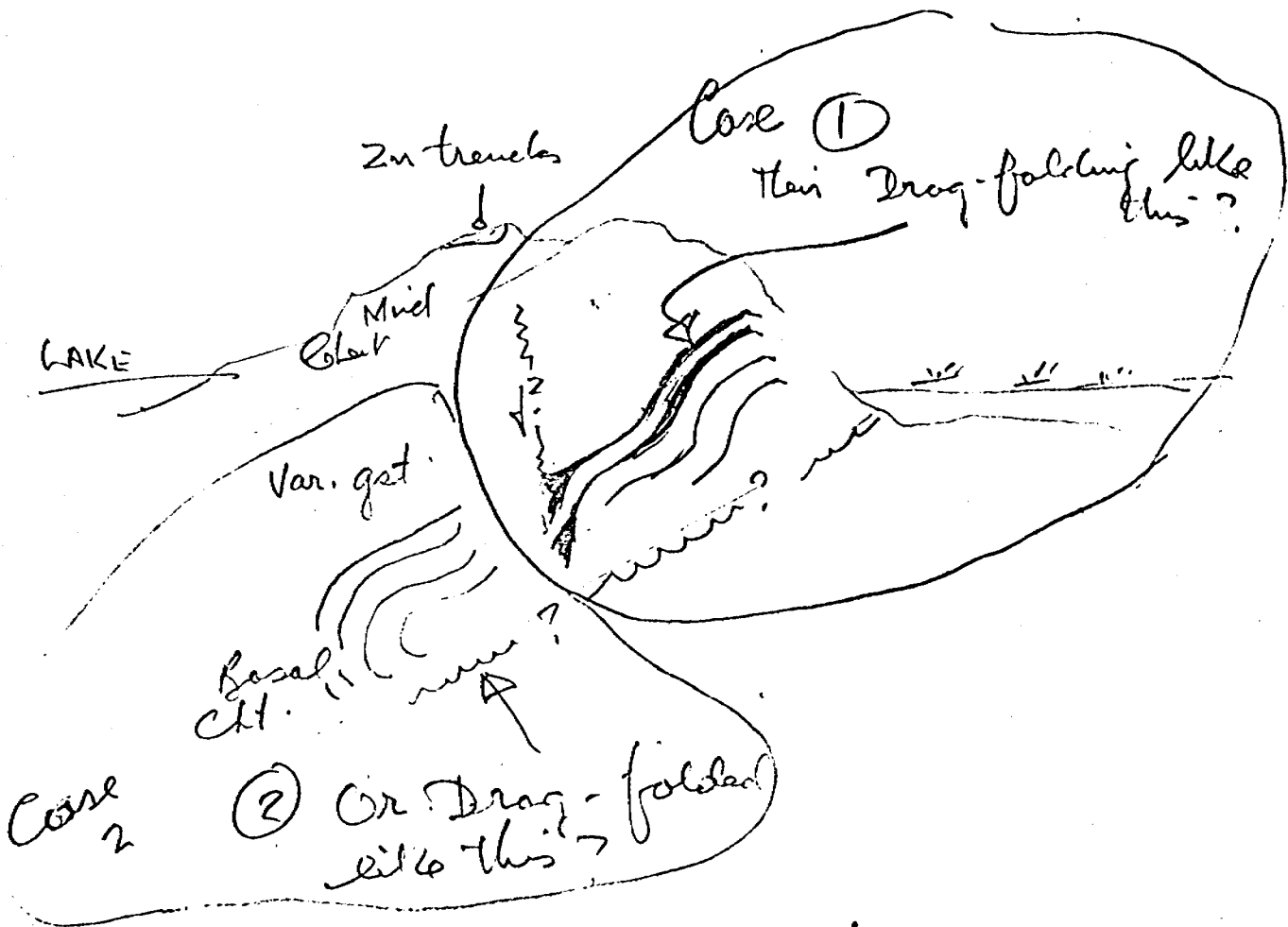
The Tower Group showings lie in the north-western part of the claim in the vicinity of the Forestry Observation Tower. Mineralization has been found associated with chert breccia. Chalcopyrite, sphalerite and galena have been found as fracture filling and disseminations. Seven drill holes were completed south of Tower Lake by Page Harley Mines Ltd. in 1953. The drill holes intersected the chert-argillite horizon mineralized by sphalerite and galena with minor chalcopyrite. The assay results are not available but widths of up to 50 feet carrying 3% zinc have been reported.

2. West Zone:

The west zone is the southern extension of the Tower Group. The indicated geology is similar, consisting of chert-argillites interbedded with volcanic flows and tuffs.

In 1968 Shunsby Mines completed Jim's # 1 to 3 BX diamond drill holes. Mineralization was intersected with the best grade being 2% zinc over 20 feet.

Bulldozer trenching, completed during March 1975 by Grandora Explorations Ltd., exposed a zone



[NB These ^{vert.} ~~normal~~ sections subjected to normal, left-hand east-west faults of appreciable displacement; the limiting south fault of this block has a displacement of $\pm 700'$ laterally.

of slaty argillites in contact with greenstone carrying chalcopyrite and pyrrhotite along bedding planes and slaty cleavage.

3. Main Zone:

The main zone is located in the east-central part of the claim group. Shunsby Mines Ltd. completed an extensive diamond drill program in an area 1,000 feet by 400 feet.

*our of doubtful
& failed M. Lee
X-sections
& correlation
calculations
for Middle
& Basal chert
beds*

Since the structural setting of the area was not known, an attempt to correlate the drill hole results failed and ore reserve estimates made are inconclusive. In general the eastern part of the main zone is underlain by the basal cherts in fault contact with the Keewatin Volcanics to the east. The cherts are dragfolded and have a westerly dip.

*our
Basal
Dip*

*see opposite
page* *what evidence?
Vert or horizontal?*

From drill data several parallel north trending faults, approximately 200 feet apart, move the western section step like downwards. This is indicated by the presence of upper cherts and middle cherts in fault contact with the volcanics. Mineralization has been intersected in each chert unit, and has been interpreted to be continuous mineralization within the basal chert. This affected the initial ore reserve estimates.

(This suggests drag folds present here as Case #1 opposite

Grandora Explorations Ltd. attempted to prove the continuation of the indicated ore grade

of Main Zone
or South Zone
(west limb?)

mineralization to the west by completing 11
diamond drill holes. The results of the drilling
prove that faulting cuts off the basal chert
zone.

4. South Zone:

The south zone is separated from the main zone
by a north-easterly trending regional fault
zone.

!?

It brings the middle chert to the south in ^{Yes! through to S.}
contact with the basal cherts to the north. Extensive diamond drill data completed on this
zone showed that the middle cherts are separated by 200 feet of volcanics from the basal
cherts.

where?

The composition of both chert horizons changes
along a north-westerly trend from about 50%
argillite to 10% argillite north of the line.?

This suggests a sedimentary basin deepening to
the south-west. No drill information is available
from this area. *From where? to where?*

The mineralization occurs as massive chalcopryrite-
sphalerite concordant to the bedding in the
argillites or as disseminations and breccia
fillings in the cherts.

The presence of slumpage features within the
argillites involving massive sulfide beds suggests

syngenetic mineralization. A rude sulfide zoning is indicated by the change of the mineralogy from pyrite-pyrrhotite to pyrite-chalcopyrite-sphalerite to chalcopyrite-sphalerite.

GEOPHYSICAL SURVEYS

Turam Electromagnetic Survey:

During July and August 1965, Seigel & Associates completed a Turam E.M. Survey over the patented mineral claims.

The survey outlined 11 conductors worth further investigation. *add on both the East & West limbs.*
Nearly all of these conductors lie in the area of the Main or South zones or their extensions. Where conductors have been tested on the property it becomes apparent that ore grade mineralization was found in areas of reversed polarity. Normal conductors, where tested, usually consist of shear zones or fault zones carrying heavy graphite and in parts sulfides. *General*

Magnetic Survey

This survey covered the same area using a Sharp MF1 Magnetometer. The results show locally strong magnetic relief of an inconsistent pattern. In general, electromagnetic and magnetic anomalies do not coincide. *I view magnetics as indicating chert distribution extremely well!*

A magnetic anomaly tested by DDH 74-15 intersected chert breccia containing up to 30% disseminated pyrrhotite.

In general, the magnetic anomalies indicate small shallow bodies of short strike length.

GEOCHEMICAL SURVEY

During September 1974, Grandora Explorations Ltd. completed an orientation geochemical survey over the southern extension of the South Zone and the eastern part of the Tower Group.

On the South Zone several areas anomalous in copper and zinc were outlined. Follow up bulldozer trenching showed that heavy glacial deposits containing boulders coated with malachite could be the source of the anomalies. *Is there a solid reason for assuming float is only source of anomalies*

This is a surprise!
Bed rock was reached at the northern limits of the surveyed area. Here chalcopyrite and sphalerite associated with pyrite occur as disseminations and fracture filling in chert.

On the Tower Group 2 anomalous areas have been outlined, but not followed up.

DIAMOND DRILLING

Approximately 50,000 feet of drilling had been completed prior to Grandora Explorations Ltd. optioning the property. Nearly all of this was concentrated within the limits of the Main Zone and South Zone.

Main Zone:

A study of the distribution and orientation of the drill holes in the Main Zone shows that although numerous holes were completed, the majority were drilled in such a manner that they cannot be used for ore reserve estimates, i.e., parallel to the strike of the mineralized horizon or down the dip of the mineralized horizon. During the recent drill program 10 diamond drill holes for a total of 2,396 feet were located in the Main Zone. The purpose of this program

was to extend the mineralization to the west and find the eastern limits.

The results of this program delineated the east-west extent of the possible open pit ore zone. The boundaries are two northerly trending faults.

South Zone:

Drilling in the South Zone was conducted in a more professional manner. Spacing of the diamond drill holes was at approximately 200-foot centres. The results showed that the spacing was too wide to allow projection of intersected mineralization from drill hole to drill hole.

True in part only. See deepest section drilled in Main Ore Zone!
Yes. And many holes did not explore both Middle & basal chert breccia beds.

The purpose of the recent drill program, consisting of 11 drill holes for a total footage of 4,846 feet, was twofold; first, to extend the known mineralization and second, to clarify the structural setting.

This is a very important observation (if true)! See evidence

The results of this drill program showed that the best mineralized sections are located within the argillites or along the argillite-chert contact, localized along the crestal region of tight, low amplitude folds. Anticlinal folds appear to be more favourable for localizing mineralization because of greater thickening of the sedimentary units and more intense brecciation, but in the vicinity of fault zones strong brecciation of the synclinal crestal

region can carry good widths of ore grade mineralization as is evident in the eastern part of the Main Zone.

*I agree
in general
with this*

Further, the bedded mineralization intersected suggests that the original sulfides are syngenetic in origin and have been partially remobilized from the limbs of the fold structures into the crestral regions. More work will be necessary to definitely confirm this model.

add by faulting & folding, and possibly late Qtz - porphyry intrus.

ECONOMIC GEOLOGY

Main Zone - Basal Cherts:

DDH 11, drilled approximately perpendicular to the dip of the horizon, intersected low grade mineralization associated with tuffs to 106 feet and entered the mineralized chert horizon at 133 feet. A projection of DDH 11 to the south into the plane of DDH's 4, 5, 6, shows that because of its higher elevation it did not intersect the main mineralized horizon.

DDH 8, 230 feet northeast of DDH 11, intersected 22 feet of .62% Cu and 5.95% Zn near surface, indicating the persistence of the mineralization to the north. Taking this into consideration, the strike length of the drilled off portion of the basal cherts within the Main Zone is 800 feet in length and has an average down dip width of 160 feet.

This area can be considered open pit potential.

The western and northern portion of the Main Zone cannot be evaluated since the drill hole spacing is too wide and the local geological setting needs clarification. Several drill holes in this section intersected one or more sections up to 20 feet thick of good copper mineralization.

DDH 82, the western-most drill hole, intersected a rock sequence not encountered previously. A northerly trending fault separates it from the central portion. The writer thinks it has been collared in the upper chert unit and has not intersected the "Basement."

Main Zone - Ore Reserves Basal Cherts

East Potential Open Pit:

Drill indicated ore based on 18 diamond drill holes has average dimensions of 450 feet along strike, 160 feet down dip and an average thickness of 57.8 feet. The average thickness can be a combination of one or two ore horizons.

Then $\frac{450 \text{ ft} \times 160 \text{ ft} \times 57.8 \text{ ft}}{10 \text{ cubic ft/ton}} = 416,160 \text{ tons grading } 1\% \text{ Cu, } 1.2\% \text{ Zn.}$

Drill possible ore as outlined from DDH 5 to DDH 8:

$\frac{350 \text{ ft} \times 160 \text{ ft} \times 20 \text{ ft}}{10 \text{ cubic ft/ton}} = 112,000 \text{ tons of similar grade}$

Main Zone - Centre:

Only a few drill holes in this section were deep enough to intersect the basal cherts. DDH's 91, 83, 85, 81 and 89 intersected one or more ore grade sections. Not enough data is available to allow an ore reserve estimate. This zone has an excellent potential.

Main Zone - West:

DDH's 82, 74, 104 and 108 intersected ore grade mineralization. The spacing of the holes is too wide to allow interpretation.

Main Zone - Middle Cherts:

No definite dimensions can be assigned to the possible open pit potential of the middle cherts within the Main Zone. From scattered drill holes, widths of approximately 20 feet assaying in excess of 1% Cu and 1.5% Zn are indicated. Assuming a strike length of 700 feet, DDH 47 to DDH 9, and a down dip extent of say 200 feet and a thickness of 20 feet, the possible indicated tonnage is:

$$\begin{array}{l} \underline{700 \text{ ft} \times 250 \text{ ft} \times 20 \text{ ft}} = 350,000 \text{ tons, say 1\% Cu,} \\ 10 \text{ cubic ft/ton} \qquad \qquad 1.5\% \text{ Zn.} \end{array}$$

Total drill indicated and drill possible ore:
878,160 tons.

The chances of outlining additional ore in the central and western part of the Main Zone, open to the north and along the down dip extension to the west, are good.

Ore Potential - South Zone:

The mineralization outlined by diamond drilling lies within the Middle and Basal Cherts and appears to be fault-bounded on three sides. The apparent displacement or direction of movement of the faults is not known.

Middle Cherts:

The dimensions of the mineralization, as indicated from 14 diamond drill holes, are approximately 450 feet by 270 feet by 33 feet. The weighted average grade from diamond drilling is 0.27% Cu, 3.17% Zn. The mineralization splits into two

sections separated by dykes or volcanics as evident from drilling, but widths given a total widths of mineralization intersected.

$$\frac{450 \text{ ft} \times 270 \text{ ft} \times 33 \text{ ft}}{10 \text{ cubic feet/ton}} = 400,900 \text{ tons grading } 0.27\% \text{ Cu, } 3.17\% \text{ Zn.}$$

The northern part of the South Zone has been drilled at 200 foot centres. It is fault-bounded to the north and east; hence correlations between individual drill holes on opposite sides of the faults is not possible.

DDH's 68-4, 68-6, 68-10, 32 and 53, located in this area, intersected chalcopryrite and sphalerite mineralization from 5 to 30 feet thick.

More diamond drilling will be necessary to delineate the potential of this area.

Basal Cherts:

The mineralization in the Basal Cherts appears to be directly related to the extent of the argillaceous beds. The mineralized intersections are from 5 to 32 feet thick and split frequently into two or more distinctive bands. The average dimensions of this zone, based on 16 diamond drill holes are 400 feet by 400 feet by 20 feet grading 0.58% Cu and 2.48% Zn.

$$\frac{400 \text{ ft} \times 400 \text{ ft} \times 20 \text{ ft}}{10 \text{ cubic ft/ton}} = 320,000 \text{ tons grading } 0.58\% \text{ Cu, } 2.48\% \text{ Zn}$$

The possible extension of this zone is faulted off. DDH 68-6 to the northwest shows good mineralization, similar in grade and association, and is the possible faulted off part of this zone. More diamond drilling will be necessary to delineate this zone and the extent of the faulted of section.

Total Drill Indicated and Drill Possible Ore:

	<u>Middle Cherts</u>	<u>Cu%</u>	<u>Zn%</u>	<u>Basal Cherts (tons)</u>	<u>Cu%</u>	<u>Zn%</u>
<u>Main Zone:</u>						
Indicated	350,000 (tons)	1.00	1.50	416,160	1.00	1.20
Possible				112,000		
<u>South Zone:</u>						
Indicated	400,900 (tons)	0.27	3.17	320,000	0.58	2.48
	<u>750,900 (tons)</u>			<u>848,160 (tons)</u>		

(Signed)

F. Holcapek
PROFESSIONAL
PROVINCE
OF
F. Holcapek, HOLCAPEK
Geologist
COLUMBIA
ENGINEER

Vancouver
April 8, 1975

350,900
416,160
112,000
750,900

CERTIFICATION

I, Ferdinand Holcapek of 92-10842 152nd Street, Surrey, British Columbia, do hereby certify that:

1. I am a graduate of the University of British Columbia with a Bachelor of Science Degree in Geology, 1969.
2. Since graduation I have been engaged in mining exploration in British Columbia, Yukon Territory, Northwest Territories, Quebec, Ontario, Nevada, Arizona, Mexico and Australia.
3. I am a registered member, in good standing, of the Association of Professional Engineers of British Columbia.
4. I am a Consulting Geologist.
5. I have supervised the exploration program conducted from September 1974 to March 1975 on the subject property.
6. I have not received, nor do I expect to receive, any interest, directly or indirectly in the properties or securities of Grandora Explorations Ltd.

Signed: _____

F. Holcapek P. Eng. K
Consulting Geologist

Vancouver, B.C.

