ZETA 1-40 CLAIMS

GEOLOGY, GEOCHEMISTRY, GEOPHYSICS,

and

DIAMOND DRILLING, 1984

Dawson Mining District

N.T.S. 115 P/14

Latitude $63^{\circ}54'30''$N

Longitude $137^{\circ}17'30''$W

OWNER: Noranda Exploration Company, Limited
(No Personal Liability)

AUTHOR: B. Jago, M.Sc.

DATE: August, 1984.

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 162,387.08 .

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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SUMMARY

Follow-up of stream sediment anomalies discovered during a regional sampling program led to the 1982 discovery of Pb-Ag-Sn ± Au greisen mineralization along the margin of the Cretaceous Lost Horses Stock 100 km east of Dawson City, Yukon in the Syenite Range Mountains. The greisen consists of roughly equal amounts of quartz and black tourmaline with up to 10% arsenopyrite and variable amounts of microscopic jamesonite-boulangerite. This zone was discovered in place by hand trenching in an area of mineralized boulders and then followed up by a VLF survey, detailed soil sampling and diamond drilling in 1984.

Results to date indicate that the greisen occurs as a replacement zone (vein?) along a northeast trending fault. It has been traced for a strike length of 150m to a depth of 50m and is bounded by 5-10m wide zones of intense alteration to clay, kaolinite and talc. Assay data suggests that the near surface portion of the vein has been heavily leached.

CHAPTER ONE: INTRODUCTION

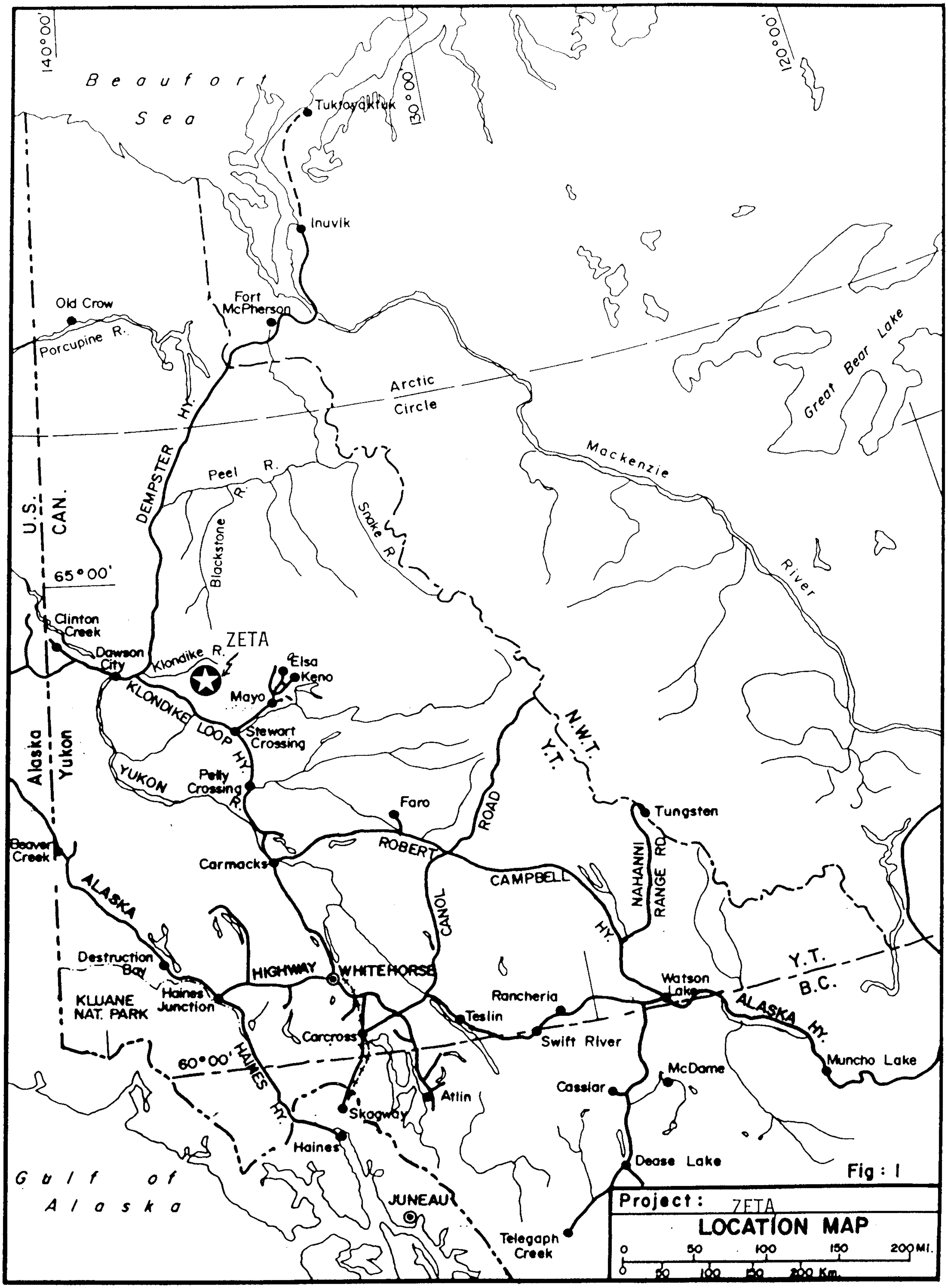
1-1: Location and Access

The Zeta 1-84 claims cover the north-central margin of the Lost Horses Stock, within the Syenite Range Mountains, 105 kilometres east of Dawson City, Yukon, at 63°54'30"N and 137°17'30"W (Figure 1). The Klondyke Highway and Clear Creek road are located approximately 35 and 20 kilometres to the southwest, respectively. A winter cat trail, largely impassable during the summer with track-mounted vehicles, passes within the Ross Creek valley 4 kilometres north of the claims. Access to the property to date has been by helicopter from Barlow Dome on the Clear Creek road.

1-2: Physiography and Natural Resources

The Zeta claims are situated along the northern contact of the Lost Horses Stock. The northern half of the claims are characterized by gently rolling hills underlain by recessive shales and slope moderately northward into the Ross Creek valley. Hill slopes are covered by low shrubs at higher altitudes giving way to a continuous cover of spruce and lesser poplar in creek valleys. Claims situated within the Lost Horses Stock are characterized by moderate to very steep, blocky talus slopes with only low shrubs and very steep to shear cliffs. Elevations range from 1375 metres to 1925 metres. In general, the topography within the central (Syenite Creek Valley) and southwestern portions of the intrusion is gentler than elsewhere.

During the spring and early summer, water resources are abundant and creeks are fed largely by melting snow and ice. During the mid to late summer, streams at moderate to high elevations are dry. Replenishment of streams by rainfall is not assured as the weather within the Syenite Range is seasonally unpredictable. Streams occupying major valleys are active throughout the spring, summer, and fall, providing adequate water for drilling. Timber for small scale construction is limited to elevations below 1200 metres.



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1-3: History of the Claims

The Zeta 1-32 claims (Grant numbers YA 79015-46) were staked on June 24th, 1983 and later added to (Zeta 33-40 claims, Grant numbers YA 79190-97) on August 4th, 1983 to cover a second area of interest (Figure 2). The recording dates of these contiguous claims were June 27, 1983 and August 31, 1983, respectively. Upon receipt of this report, the claims will be in good standing until the common date of December 27, 1992.

Silt sampling was initiated in this area by Mattagami Lake Expl. in 1980 (Metcalfe, 1980, Biczok, 1980) and was followed up in 1981 (Biczok, 1982) when a significant arsenic-in-silt value (200 ppm Arsenic versus a background of 2 ppm) was obtained in a single stream draining the northern margin of the intrusion. Silt sampling and limited detailed prospecting in June, 1982 located additonal anomalous As-in-silt values within the same stream and identified at least one possible source for the anomaly (Jago, 1982). More detailed mapping and limited hand-pitting of this discovery located greisen-style mineralization in highly altered syenite subcrop and quartzite float. This prompted a more detailed follow-up in 1983 at which time, several hand trenches and pits located 5 to 6 metres of subcropping, greisen-style tourmaline-quartz-clay-sulphide vein mineralization. Significant rock geochemical results (13 opt Ag) and the discovery of a second, lower grade vein occurrence located 500 metres to the south prompted a detailed program of exploration in 1984 (see below).

1-4: Work Program

Work commenced on the Zeta 1-40 claims and surrounding Lost Horses Stock on June 16, 1984 and was terminated after the completion of grid layout, detailed and reconnaissance geological, geochemical, and geophysical surveys, trenching, and detailed diamond drilling, on August 22, 1984. A crew of four geologists completed the detailed and reconnaissance surveys while two geological staff and a cook were present during diamond

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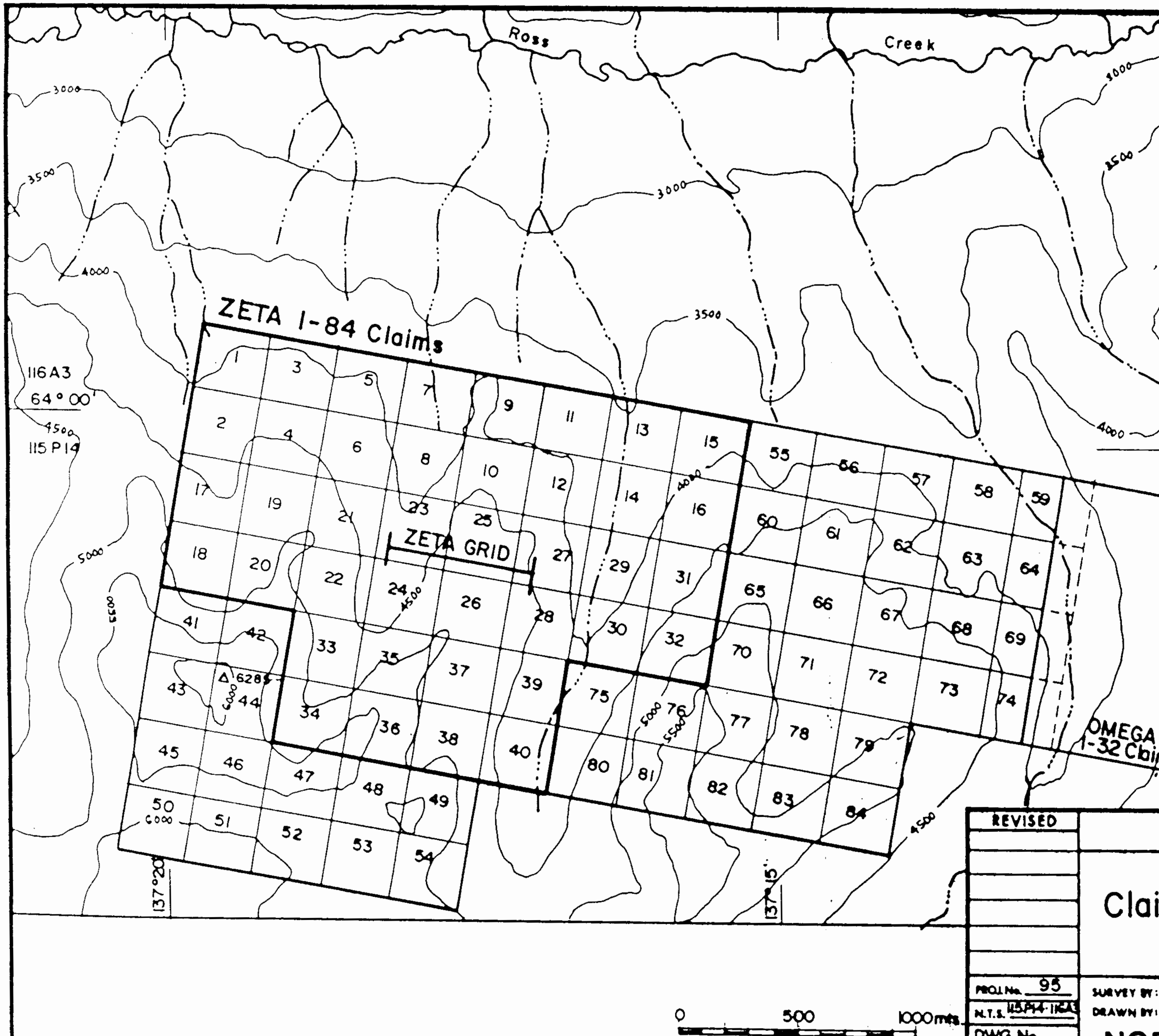


Fig: 2

REVISED	ZETA Claims
	Claim Location Map
PROJ. No. 95	SURVEY BY: ______ DATE: AUG 84
N.T.S. 115P14-116A3	DRAWN BY: AI SCALE: ______
DWG. No.	NORANDA EXPLORATION OFFICE: Whitehorse

drilling. The Zeta camp was serviced by a Bell 206B helicopter on casual charter from Capital Helicopters in Dawson City, Yukon. Drilling was carried out using a "small-38" diamond drill (NQ-core) on contract from Arctic Diamond Drilling Company Ltd. of Whitehorse, Yukon. A total of 883.1 metres of NQ diamond drilling was completed from 10 drill holes collared at 7 drill set-ups.

CHAPTER 2: GEOLOGY

2-1: Regional Geology

The regional geology of the Syenite Range (Map 1) has been described in exploration reports by Biczok (1981), Jago (1982), and in detailed property reports (Omega 1-32) by Biczok (1983). Briefly; Cambrian(?) to Ordovician and Silurian(?) fine to coarse-grained clastic and chemical metasediments have been intruded by several monzonititc to syenitic and granitic plutons. These Paleozoic sediments were deposited in an elongated, fault-bounded(?) basin (now 40 x 80 kilometres) which trends SSW-NNE and subsequently was broadly folded about an east trending axis. Local second or third order basins, bounded by graben-like fault systems, are suggested by the occurrence of several stratiform barite horizons on the Omega and Zeta claims, phosphatic shale (Omega 1-32 claims), and thick, marginal units of coarse chert-pebble conglomerate. No stratiform sulphide mineralization has been found although elevated Pb ± Zn ± Ag-in-soil anomalies on the Omega claims (Biczok, 1983) indicate that local, very low grade concentrations do occur. The Cretaceous intrusions form part of a >600 kilometre long belt of often highly mineralized stocks, plugs, and dyke swarms which stretches from MacMillan Pass in the east to north of Dawson City, Yukon in the west. Significant and varied occurrences of Pb-Zn-Ag-Au-W-Mo-Sn-Sb mineralization occur throughout the belt. Within the past five years, Mattagami Lake Exploration Company Ltd. and Noranda Exploration Company, Ltd. have been actively exploring the western half of the belt and have staked the Cassiar Creek, Marn, Tak, Zeta, Omega, Riki (now lapsed), and Fiona (now lapsed) claim groups.

This report concerns exploration of tourmaline greisen and quartz ± tourmaline-base + precious metal vein occurrences in the zoned, syenitic to granitic Lost Horses Stock.

2-2: Geology of the Lost Horses Stock Area

Table 1 presents a revised Table of Formations (after Jago, 1982) used by Company personnel in the 1982 to 1984 exploration seasons. The only changes to this Table have been the complete revision of rock units within the Lost Horses Stock Formation.

Sedimentary Formations

A detailed description of the Table of Formations is given by Jago (1982). Briefly; late Cambrian to early Ordovician fine to coarse-grained clastic and chemical sedimentary rocks occur about the periphery of the Lost Horses Basin (Company name). These are conformably overlain by Lower to Upper Ordovician (or younger); generally finer grained carbonaceous, clastic, and chemical sediments although siliceous precipitates and their reworked equivalents (chert pebble conglomerates) occur throughout the section. Both large scale graben formation and shallow, fault-bounded second or third order basin formation is suggested by the widespread occurrence of thick, medium to coarse-grained chert pebble conglomerate units and the local development of low-grade baritic and phosphatic shales and high-grade stratiform barite. No sediment hosted sulphide occurrences have been found. Toward the centre of the Lost Horses Basin, the sediments are much finer-grained and carbonaceous shales and cherts predominate. Biczok (pers. comm.) interprets Unit 3 (h), a poorly lithified, buff sandstone to quartzite to represent the remnants of a meander river channel. This suggests that at several times during basin formation, large scale tectonic activity changed the source area and depositional facies of some of the regional sediment load.

Intrusions

The Lost Horses Stock is a zoned stock approximately 8 kilometres in diameter. The margin of the stock (Unit 4a) is generally K-feldspar-phyric, hornblende ± biotite syenite but locally medium to coarse-grained equigranular. Feldspar phenocrysts are typically flow-aligned (during

TABLE ONE: TABLE OF FORMATIONS, SYENITE RANGE MAPPING

LEGEND

CRETACEOUS

4. Lost Horses Stock

   a) Hornblende ± Biotite, K-feldspar-phyric Syenite

---Gradational Contact---

   b) Biotite ± Hornblende, K-feldspar-phyric Syenite

   c) Hornblende ± Biotite, K-feldspar-phyric Quartz-Syenite

---Gradational Contact---

   d) Biotite ± Hornblende, K-feldspar-phyric Quartz-Syenite

---Gradational Contact---

   e) Hornblende ± Biotite + Tourmaline Granite

---Gradational to Intrusive Contact---

   f) Tourmaline-patch (Muscovite) Granite I) Coarse grained
      II) Fine grained

---Intrusive Contact---

   g) Quartz - Feldspar Porphyry

   h) Siliceous Phlogopite ± Quartz Porphyry

   i) Orange-weathering Calcite Fault Gouge

---Intrusive Contact---

ORDOVICIAN (or later?)

3. Clastic Formation

   a) Black shale with siliceous interbeds

   b) Quartzite, minor conglomerate and shale

   c) Green-grey quartzite with a volcaniclastic component

   d) Light clastic Unit 1: Chert pebble conglomerate > quartzite > shale

   e) Black Shale

   f) Light clastic Unit 2: Lithic pebble quartzite > chert pebble conglomerate > beige quartzite

   g) Black clastic Unit: Greywacke > Chert pebble conglomerate and coarse-grained quartzite

   h) Buff sandstone/quartzite

   i) Interbedded black shale and minor quartzite; local laminated barite and phosphatic shale

   j) Black shale with interbedded chert

2. Carbonate Formation

   a) Thinly laminated dolomitic limestone

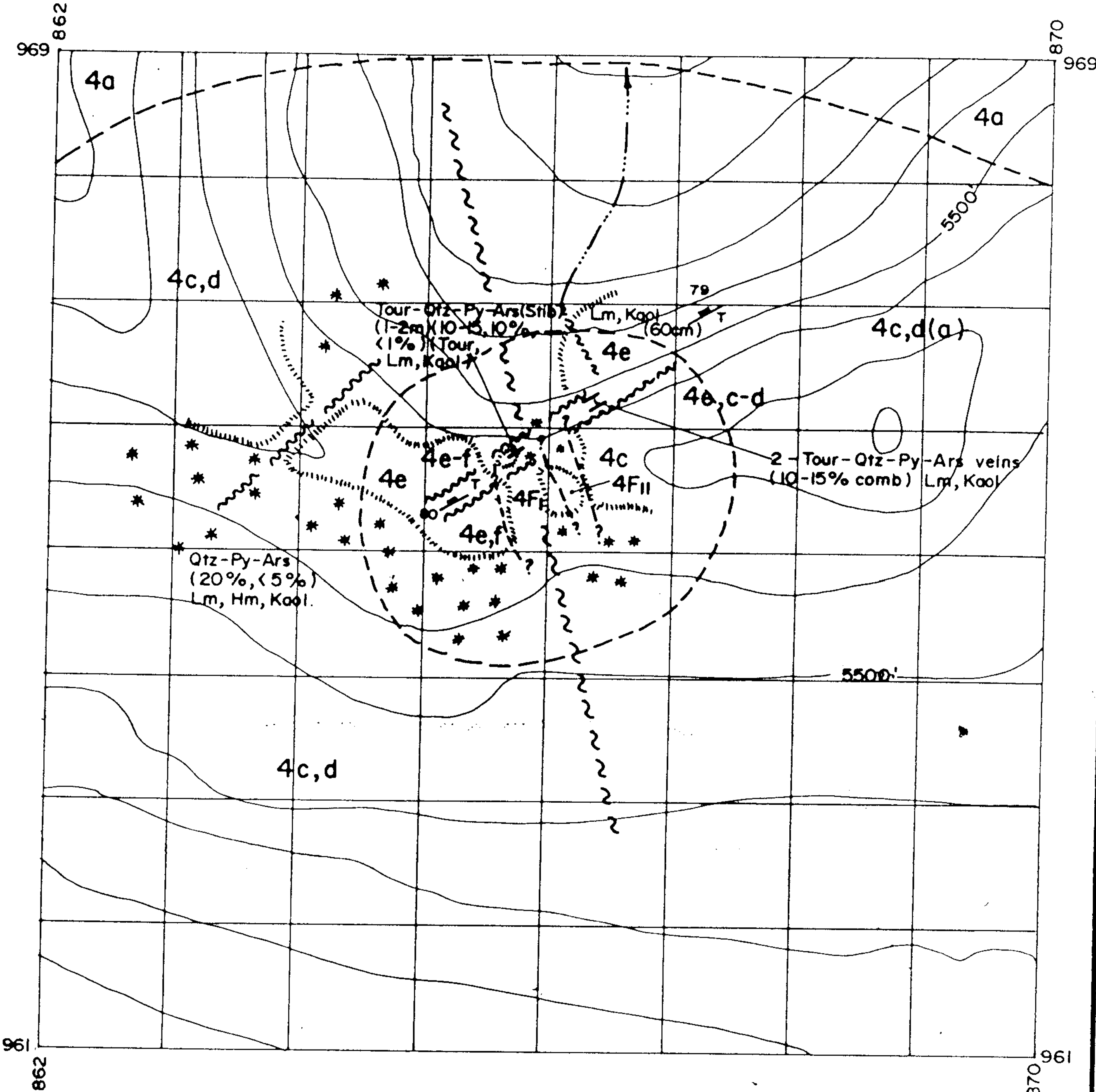
   b) Highly foliated graphitic schist

   c) Very fine-grained dolomitic quartzite

ORDOVICIAN (or earlier?)

1. "Grit Unit"

   a) Quartzite, slate, phyllite, limestone intrusion) near the margin (although not parallel to it) and much of the interior of the stock. Phenocrysts are usually uniform in size (maximum 3-4 cm long) within the border phase but zone megacrysts, up to 6 cm long, are common up to 3 kilometres inward from the contact. Hornblende typically predominates over biotite (2-3:1) in the groundmass and is always subordinate to feldspar (1:4). Potassium-feldspar phenocrysts may comprise up to 65% of this unit. Sodic-feldspar, although probably present in subordinate amounts ($<$ 10%), cannot be identified readily in hand sample and will be omitted from further descriptions. The relationship of Unit 4(b) and 4(a) is poorly understood as Unit 4(b) has only been seen in talus. Typically it is very biotite-rich (up to 50% biotite) and generally K-feldspar poor (locally up to 15%) and probably represents a biotite-rich, feldspar-poor end-member of Unit 4(a). This more hydrous phase appears to be related to broad zones of quartz-and tourmaline-vein mineralization but mapping thus far has not been sufficient to confirm this thesis. Gradationally inwards from the margin of the stock (Maps 1 and 2) lay a central zoned core, approximately 2.5 kilometres in diameter. This is composed of quartz-syenite and various tourmaline-bearing granites. Although Maps 1 and 2 depict contacts between the units, the exact contact relationships are not understood and are best described as gradational. Unit 4(c) is similar to Unit 4(a) but has a higher quartz content which increases gradationally inwards over several hundred metres. Locally biotite is strongly developed (Unit 4d) in the proportion 2:1 compared to hornblende. K-feldspar phenocrysts to 3 cm and megacrysts (greater than 4 cm long) in this unit are typically strongly aligned and often very well zoned, presumably toward more sodic grain margins. Hornblende is a common inclusion in many megacrysts. Tourmaline-bearing and tourmaline-rich granitic phases comprise the central core (c.a. 205 m in diameter) of the Lost Horses Stock (Figure 3). Unit 4(e), a hornblende ± biotite, K-feldspar-phyric, tourmaline granite is a tourmaline-bearing (up to 5-8%), granitic equivalent of Units 4(c) and 4(d). This lithology contains highly variable proportions of feldspar phenocrysts, mafic minerals, and quartz. Within this phase, tourmaline occurs



Map units same as Maps 1 & 2.

Fig.: 3

REVISED	ROSS CREEK (ZETA Claims)
	Geological Plan – Granitic Core Lost Horses Stock
PROJ.No. 95 N.T.S. 115P14-116A3 DWG. No.	SURVEY BY: ____ DATE: NOV 84 DRAWN BY: Al SCALE: 1:5000 NORANDA EXPLORATION OFFICE: Whitehorse

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interstitially with brown quartz (25-30%), hornblende ± biotite (10-15%), K-feldspar (25%), and very minor magnetite or ilmenite. Feldspar phenocrysts (maximum 3 cm, lmg) and less commonly megacrysts (minimum 4 cm long) are strongly zoned and very well aligned indicating that large scale fractionation, crystal-mush movements and crystal settling occurred prior to complete crystallization of the groundmass. Unit $4F_I$ is a medium to coarse-grained, tourmaline-bearing, orbicular(?) muscovite granite (feldspar 60%, quartz 25-30%, tourmaline + opaque + muscovite 5%) containing large (up to 20 cm across) oval to blocky-oval, sometimes rhythmically zoned concentrations (orbicules?) of tourmaline. Minor constituents in the orbicules are similar to those found in the granite groundmass. The origin and composition of brown and green alteration spots (10-15%) is unknown. Closely related to Unit $4F_I$ is a fine-grained (Unit $4F_{II}$), brown-spotted, granite of similar composition. In the Table of Formations, it has been included as a fine-grained equivalent of $4F_I$ and in the field it has been mapped as a chilled contact phase. Tourmaline content is low (maximum 2%) and all other phases (quartz 35-40%, groundmass feldspar 50-55%, K-feldspar microphenocrysts to 3 mm, 3%) are in similar proportions to the coarser grained equivalent. The origin of the brown quartz-rich(?) spots and their exact composition is unknown.

Unit 4(g) is a very fine to medium-grained, quartz-feldspar porphyry dyke which has been traced within and parallel to the contact of the intrusion over a distance of 2 kilometres. Quartz and feldspar phenocrysts occur in equal proportions and represent locally up to 15% of the rock volume. Minor tourmaline is occasionally developed at the dyke contacts and pyrite occurs locally within the dyke core. Unit 4(h) has been found only as a 2-3 metre wide dyke on Arsenic Ridge. Phlogopite(?) is the dominant phenocryst compared to quartz (3:1) although it comprises only 2-3% of the rock. Unit 4(i) occurs in a single, faulted, fracture zone up to 4-5 metres wide and parallel to the contact on Arsenic Ridge (see also Map 3, Geology of the Zeta Grid). A single occurrence was found in the metasediments on the eastern flank of Cyanide Ridge, 2 kilometres to the west. The relationship of these barren calcite-rich fault zones to the intrusion is unknown, however, they may be a late phase associated with post crystallization faulting and degassing of the Lost Horses Stock.

2-3: Geology of the Zeta Grid

The Zeta grid covers a portion of the northern margin (Arsenic Ridge) of the Lost Horses Stock and steeply to moderately dipping Ordovician metasediments. Map 3 illustrates the geology of the grid and Table 2 is the Table of Formations.

The contact between the Cretaceous Lost Horses Stock and Ordovician metasediments is highly irregular and possibly offset by several subparallel faults striking between 60^{o} and 90^{o}. (Several of these faults are mineralized and will be discussed separately.) The contact aureole is hornfelsed with secondary biotite weakly to moderately developed (maximum 5 to 8%) in the generally highly fractured quartzite and coarse clastic metasediments up to 100 metres from the contact. Close to the contact, pyrite and/or arsenopyrite is concentrated up to 5% in very rusty weathering rocks. Tourmaline and muscovite veinlettes are developed locally. Beyond the contact aureole, the regional fissility predominates and the prophyroblastic mica is absent. Very strong zones of bleaching and sulphide mineralization are locally developed at low to moderate angles to the contact. These sulphides typically are a mixture of arsenopyrite, pyrite, and a number of the solid solution series jamesonite-boulangerite (I.D. from thin section analyses). This parageneses is similar to that found in tourmaline veins within the intrusion. In sulphide-poor portions of these bleached zones (extremities?), very thin (1-2 mm) scarce, muscovite and cassiterite (hand sample I.D. only) veinlettes are developed. These veins are limited in size (maximum 5-10 cm long) and are often discontinuous along joint planes. Bleaching of the host metasediments is variable but can always be recognized by the lighter colour of the rock, its vuggy appearance, gritty texture and growth of siliceous atolls about highly corroded detrital quartz grains. Sulphides, if present, weather to a dull to bright green-yellow stain on joint planes and exposed surfaces. Occasionally these arsenates cement rock fragments together forming an arsenate-quartzite fault breccia. These zones are traced easily with soil geochemistry and with difficulty using VLF-EM methods.

TABLE 2: TABLE OF FORMATIONS

ZETA GRID AREA

CRETACEOUS

3. TOURMALINE VEINS

   a) Three tourmaline, tourmaline + quartz ± sulphide ± clay ± limonite vein

   b) One tourmaline, tourmaline ± quartz vein

2.

   a) Hornblende + Biotite, K-feldspar-phyric Syenite

   b) Biotite Syenite
      I) Coarse grained**
      II) Medium to fine-grained**
      **May not be co-genetic equivalents

   c) Granodiorite

   d) Siliceous mica-porphyry

   e) Orange weathering, calcite fault gouge

1. ORDOVICIAN-SILURIAN

   a) Quartzite (hornfelsed, may be very altered (potassic metasomatism) and rusty (maximum 3% Py + Ars. comb.)

   b) Coarse clastic (pebbly quartzite or pebbly greywacke to chert pebble conglomerate)

   c) Laminated greywacke to sandy siltstone

   d) Light grey chert

   e) Black, carbonaceous chert

   f) Black chert with interbedded grey-black (carbonaceous) shale

   g) Laminated sandy siltstone to siliceous siltstone with minor interbedded chert pebble conglomerate

   h) Laminated barite

   i) Clastic dyke

ALTERATION

Tb	- very fine grained and/or thin tourmaline blasts or veinlettes b - black tourmaline
Kaol.	- Kaolinite ± limonite ± hematite alteration
Bi, Bm, Bs	- Bleached host rock; (often very gritty and sandy) i - intense, m - moderate, s - slight
Mv, Mh	- fine to medium grained micas; Mv - tiny phlogopite or muscovite fracture fillings and veins Mh - very fine grained biotite in hornfelsed quartzite
S	- Sulphides - probably pyrite and arsenopyrite; less than 3 to 5% comb.
R	- Rusty
Arsn	- Arsenate stain - green, green-yellow
Q.V.	- Quartz vein

2-4: Discussion of the Table of Formations

Table 2 presents the Table of Formations and Map 3 illustrates the geological interrelationships. In general, Units 1a-c, 1d-g, and 1h on Table 2 correspond to Units 3f, 3i, and 3g, respectively on Table 1.

Unit 1a is a compact, light (where bleached) to dark coloured, fine to coarse-grained quartzite to siliceous greywacke. Bedding thicknesses are unknown but regionally these are less that 20 cm. This hornfelsed unit can be traced for several kilometres along strike to the east and west and typically is interbedded with Units 1b and 1c. The former is a medium to coarse-grained pebbly quartzite to pebbly greywacke and locally a chert pebble conglomerate. In alteration zones, it is bleached and gritty, the chert clasts usually being recognized by only lightly coloured spots. Unaltered samples are composed of white to black, angular (less than 2.5 cm across) fragments in a sandy greywacke to light coloured cherty matrix. Unit 1c is a laminated greywacke to sandy siltstone and was observed only in drill core. Laminations are less than 1.5 cm thick and form alternating light siliceous and dark mafic-rich bands. Away from the contact region, this rock becomes sandier in texture and more siliceous. Unit 1d is a light grey chert similar in appearance to chert clasts found in the regionally extensive chert pebble conglomerates. This is the first exposure of this unit observed in the Lost Horses Basin possibly because it is only 4 to 5 metres thick. Unit 1e is a thin (4-5 m), thin bedded (2-20 cm), black, carbonaceous chert unit with interbedded laminations of black carbonaceous shale. The close proximity of the light and dark coloured cherts suggests that deep basin, euxinic sedimentation developed rapidly. The absence of nearby stratigraphically equivalent coarse sediments (coarse chert conglomerates) from a fault scarp basin margin indicates that;

1) the newly formed (2nd order) basin margins are distal, or
2) that only rapid basin subsidence was responsible for the rapid facies change, or
3) that the basin simply was starved from a water-sediment influx and that basin waters naturally became stagnant.

Further regional mapping is necessary to evaluate these options. Unit 1f consists of interbedded thin bedded (maximum 5 cm thick), grey-black carbonaceous chert, cherty shale, and shale. This unit is thicker than 1d or 1e, (10 metres compared to 4-5 metres), but is difficult to find in the grid area. Unit 1g consists entirely of approximately three metres of light orange-weathering, finely interlaminated, white siliceous barite and white chert(?). Geochemical analysis (see below) of three, one metre samples across this horizon indicates the footwall and hanging wall sections are more siliceous than the centre of the mineralization and that the hanging wall is more highly contaminated (Fe_2O_3 11.0%, SiO_2 47.0%, Al_2O_3 9.8%) than the rest of the section. Missing from beneath the footwall is a phosphatic shale unit recognized at the Omega barite occurrence. Trenching in Unit 1g shows that the hanging and footwall contacts are strongly foliated and that the barite horizon occurs stratigraphically near the top of Unit 1f. The latter grades quickly into Unit 1h, a laminated, medium-grained, sandy siltstone to siliceous greywacke. (Stratigraphically higher and north of the Zeta grid, a dark coloured, chert pebble conglomerate becomes dominant and probably forms a separate depositional phase.) This unit is finely (maximum 15-20 cm thick) bedded and often is very fissile. Pyrite is very scarce but always imparts a rusty weathering appearance on exposed surfaces. A single clastic dyke (Unit 1i, 30-40 cm wide) was located in the northwest portion of the grid. This is a sandy, matrix-supported, moderately cohesive dyke containing abundant (50-60%) angular fragments of sandy siltstone. The lateral extent of this dyke is unknown. The orientation of this and other clastic dykes can be used to determine sub-basin orientations and syn-depositional fault orientations which are useful when propecting for stratiform Pb ± Zn ± Ag ± Ba deposits.

On the Zeta grid, the Lost Horses Stock shows little compositional variation and is essentially a (K-feldspar-phyric) hornblende + biotite syenite (Unit 2a). Feldspar phenocrysts (maximum 3-4 cm long) typically are trachoid except at the contact where they are randomly oriented and typically decrease in length to 2-3 mm. The proportion of hornblende to biotite is variable with hornblende predominating in fresh syenite (3:1) white coarse biotite predominates (2:1) near the contact and in zones of mild foliation. In the latter paragenesis, some biotite is undoubtedly secondary. Unit 2b, a fine to coarse-grained biotite syenite, has been observed only in drill holes (DDH-3, 4, 5, 9, and 10) as a weakly to strongly altered dyke. Within the intrusion (DDH-3, 4, 10) the dyke is coarse-grained with biotite crystals up to 1 cm across. K-feldspar is scarce. Within the metasediments (DDH-5, 9) this unit is very fine-grained, often very biotite-rich (up to 30%) and typically highly kaolinized and weakly to moderately hematized. Dyke splays are common (DDH-9) and the adjacent metasediments are always highly altered to clay. Geochemical analysis indicates that these dykes did not mineralize the host metasediments despite the intensity of alteration. Unit 2c occurs as a thin (maximum 6 cm) very fine-grained hornblende diorite to granodiorite dyke near the pluton margin. Contacts with the host syenite are jagged and sharp. Units 2d and 2e have been described in Section 2-2 and are omitted here.

Unit 3a is a three tourmaline, tourmaline-quartz-clay-sulphide vein. Thin section descriptions by Vancouver Petrographics Ltd. are given in Appendix A and are only briefly summarized below.

The Zeta greisen veins consist of three generations of tourmaline (maximum 50-60% of rock), quartz (maximum 40-45%), and lesser sulphide (arsenopyrite, arsenate, jamesonite-boulangerite, maximum 7-8%), and clay-sericite mixtures (maximum 25%). Secondary textures are dominant and first generation, coarse, radial aggregates of black tourmaline are typically replaced by second stage blue-green tourmaline and sericite. Quartz is often highly corroded and replaced by second generation tourmaline and a high porosity (10-15%) is common in near surface drill intersections. Sulphides are typically scarce and of unusual compositions. Secondary arsenates and much lesser arsenopyrite dominate the assemblage but secondary antimonides and oxides are present. Members of the jamesonite-boulangerite series are the likely host to Pb-Ag mineralization and minor amounts of casserite is the only observed tin mineral. Breccia veinlettes are very common throughout the veins and consist generally of secondary tourmaline although hand sample examination of drill core shows that hematite, limonite and secondary arsenate are common fracture fillings. The third generation of tourmaline is light brown in colour and decreases from 2-3% to 1% with increasing depth in the drill holes. Unit 3b is closely related to 3a and probably represents both a less evolved vein and a relatively unaltered vein type. This tourmaline vein material is largely a single generation, fairly coarse-grained, radial tourmaline occuring with lesser quartz than in Unit 3a and typically little or no sulphide. Disseminated tourmaline which occurs adjacent to massive veins is predominately composed of first generation tourmaline.

The alteration halo associated with the greisen veins is 5 to 10 times wider than the vein and consists of parallel zones of moderately to completely kaolinized and strongly limonitized intrusive. Alteration beside vein material is complete, forming a massive, locally banded and porous zone of kaolinite. Gradationally outwards from the vein, kaolinization decreases in strength and igneous textures are sometimes preserved. Biotite, followed by hornblende, progressively becomes more common as relatively unaltered intrusive is approached. Interestingly, highly kaolinized intrusive is in sharp contact with relatively unaltered intrusive. Limonitization and chloritization are the most distal alteration features of these veins. Within the veins, two massive tourmaline vein sections are often sharply separated by a narrow clay-talc section. The latter is either a distinct lithology or when containing disseminated tourmaline is interpreted as a highly altered tourmaline vein.

CHAPTER 3: MINERALIZATION

3-1: Regional Mineralization

Mineralization, with the exception of a stratiform barite occurence in the metasediments, occurs in two parageneses; 1) dominantly quartz-sulphide assemblages with very minor tourmaline, and 2) dominantly tourmaline with lesser quartz and minor sulphides. The former occupy generally small scale structural features such as joints while the latter occur in small (joint fillings) and very large regional foliation or fracture zones. Field work indicates that some polymetallic varieties of paragenesis one may be distal equivalents of paragenesis two and that some joint and fracture orientations were favoured depositional sites compared to others. Table 3 summarizes the characteristics of each vein-type and Map 2 depicts these in relationship to three major structural zones apparent within the Lost Horses Stock. Veins or kaolinite-limonite altered lineaments outside of these three areas will receive only cursory discussion.

Structural Zones

Three blocks are outlined on Map 2, each containing parallel to sub-parallel, generally mineralized structural elements. Mineralization is exposed best in the two western-most areas (Zone A and B); Zone A containing numerous, narrow quartz-sulphide veins and the Arsenic Ridge showing (Zeta Grid) and Zone B, several narrow tourmaline-and/or quartz-sulphide veins and the "Gash" vein structure. Zone C outlined several kilometres east of Zone B has received only a brief examination and contains several very large scale structures with poor to unknown mineralization.

Structural Zone A

Major mineralized joints and foliation zones within Zone A are steeply inclined and strike between 60^{o} and 80^{o}. Within the western-most portion of the area, several sub-parallel, narrow (10-15 m) but laterally extensive (greater than 500 metres long) foliation zones have formed, each containing several sub-parallel discontinuously mineralized quartz-sulphide-kaolinite-limonite veins. (In one instance, very narrow veins (2-3 cm wide)

TABLE 3

	QUARTZ VEIN	TOURMALINE VEIN
Gangue:	Quartz + (K-feldspar ≫ tourmaline)	Tourmaline > Quartz + (K-feldspar)
Sulphides:	Pyrite (max. 30%) > Arsenopyrite (max. 20%) ≫ Stibnite (max. 3-5%) ⋙ Other? (< 1%)	Arsenopyrite (max. 5%) > Pyrite (max. < 1%) > Jamesonite-Boulangerite (max. < 0.5%)* + Other?**
Vein Width:	max. 50 cm, typically less than 20 cm (excluding alteration)	up to 2-3 metres, typically less than 50 cm (excluding alteration)
Alteration Halo:	up to 80% of total vein/structure width, also very narrow, 20-25% of vein width	up to 10x the total vein width (Main Zone - Arsenic Ridge) but typically 20-25% of vein width
Alteration Assemblage:	kaolinite + limonite	kaolinite + limonite + clay/talc*** + sericite
Vein Symmetry/Zonation:	- very good, sulphides typically concentrated in centre of vein and often well zoned with arseno-pyrite-rich margins and quartz + stibnite rich cores - lateral zonation untested - vertical possibly copper depletion stratigraphically higher	- very good alteration symmetry and vein gangue symmetry - sulphides too fine grained to test - lateral zonation possibly to quartz + sulphide richer extremities, - vertical zonation possibly sulphide richer at depth
Vein Orientation:	60°-90° true/vertical in splaying veins	60°-90° true/steep to vertical in large structural zones

*These sulphides are very tiny (< .5 mm), therefore accurate handsample estimation cannot be made

**See thin section report

***Only at vein/soil interface

form orthogonal en echelon joint fillings). Individual veins are narrow (less than 30 cm wide), typically splayed and spearated from parallel veins by less than two to three metres of barren host rock. Mineralogically they are zoned from a massive to banded arsenopyrite-rich vein margin (15 to 20% of the total vein width) to a quartz-stibnite (up to 10% stibnite)-rich, sphalerite-bearing vein core. Vertical zonation is difficult to observe but chalcopyrite appears to decrease while sphalerite increases with increasing elevation. Silver appears to remain relatively constant and is low at these elevations. Lateral zoning in the veins has not been tested.

Tourmaline greisen mineralization located several kilometres to the east and still in Structural Zone A is discussed in section 3-2.

Structural Zone B

Zone B is a SW-NE trending structural zone similar in character to Zone A. Foliation zones, dilatent zones and joints host mineralization of generally uneconomic grade although several spectacular assays (see Rock Geochemistry, Chapter 4) come from the "Gash" showing. Mineralized structures in Zone B are less than 70-80 metres long although tourmaline as joint fillings extend several zone to 150-175 metres.

Within or very near the granitic core, two significant veins (Map 2) have been found. Quartz-pyrite-arsenopyrite vein float found in a seven metre wide foliation zone near the western margin consists of saccharoidal quartz with up to 30% sulphide. The host rock is extremely hematized, limonitized, and kaolinized but in only a thin selvage (approximately 50 cm). This vein is a good example of vein paragenesis one (quartz-sulphide-rich) and is typically precious metal poor.

Several tourmaline-sulphide veins occur near the centre of the granitic core. These strike ENE and the eastern-most pair may be offset splays of the western-most. The latter is a 1.4 metre wide vein structure containing highly foliated tourmaline-quartz-arsenopyrite-pyrite-stibnite with blocks of tourmaline altered granite. Several narrow lenses (maximum 10-15 cm wide) of nearby massive sulphide occur here but these are only moderately enriched in silver (see Rock Geochemistry, Chapter 4). Two veins located 40 to 50 metres NE of this vein are separated by 10 to 15 metres of quartz-syenite to granite. Both veins are narrow (less than 30 cm wide) and confined to intensely foliated structures. The alteration halo (kaolinite + limonite, 80% of vein width) here is strongly developed and the sulphides (aresenopyrite and pyrite) occur as banded masses or in discontinuous lenses. Samples here yield low base and precious metal values. Very scarce quartz-(tourmaline-sulphide) vein float was found within a large foliation zone crossing the granitic core. The vein float probably is not co-genetic with the foliation but rather has been structurally disturbed by it.

A spectacular tourmaline-quartz-clay-sulphide vein (The "Gash") was found by Company personnel in 1983 approximately 750 metres northeast of the granitic core. Figure 4a and 4b depict plan and sectional views, respectively, of this structure and show the intervals and geochemical results for chip samples recovered from it.

On Map 2, the "Gash" is shown as occuring within a curvilinear foliation zone that contains intermittent veins along its strike length. Thirty metres south of the "Gash", the zone is 2 metres wide but quickly constricts to less than 1 metre approximately 60 metres south and to only thinly spaced, very narrow sub-parallel tourmaline joint fillings 90 metres south. Within 25 metres of the centre of the "Gash", the vein is about 1 metre wide within a wider structural zone. Here it consists of quartz and clay with subordinate (3-5%) arsenopyrite and pyrite. Within the centre of the "Gash", the vein is enclosed in a 0.5 to 1.0 metre wide symmetrical alteration halo. Near the vein, kaolinization and limonitization are very intense although porphyritic textures are still preserved. This alteration diminishes toward the unaltered host, where biotization predominates. The hanging wall and footwall of the vein appear to be controlled by two pairs of dilatent joint sets (see Figure 4a) which are prominent within the area. Poorly terminated quartz crystals in the vein core, the colliform nature of tourmaline mineralization and the symmetry of vein minerologies suggests that multiple episodes of mineralization occured and that dilation continued after the last fluid movement. Appendix B includes two detailed petrographic descriptions of rock samples from the "Gash".

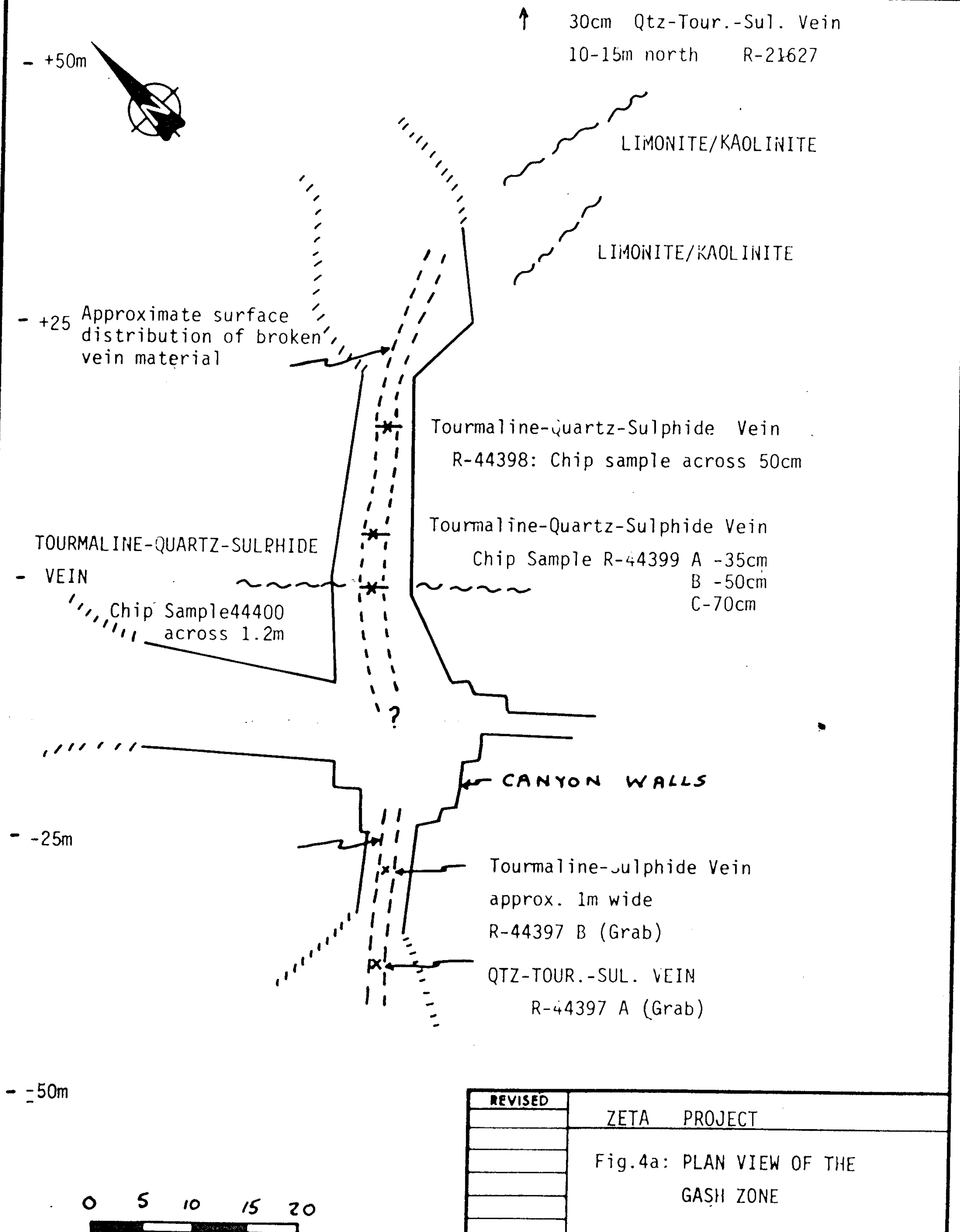

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Fig.4a: PLAN VIEW OF THE GASH ZONE

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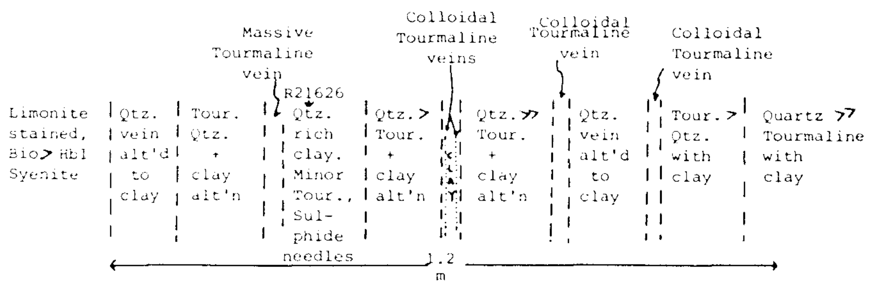

GEOCHEMICAL RESULTS OF CHIP AND GRAB SAMPLES FROM THE "GASH" ZONE

SAMPLE NUMBER	Cu (ppm)	Pb (%)	Zn (ppm)	Ag (opt)	Sb (ppm)	Sn (ppm)	As (ppm)	Au (ppb)	REMARKS
R-44397A	21	0.062	73	0.06	100	500	G1000	35	Grab Sample - 35 m S. of R-44400
R-44397B	66	0.072	65	0.18	100	600	"	55	Grab sample - 30 m S. of R-44400
R-44398	114	0.195	335	1.86	500	150	"	90	Chip sample (50 cm) 15 m N. of R-44400.
R-44399A	55	0.200	32	4.24	400	600	"	10	Chip sample (35 cm) 4 m N. of R-44400.
R-44399B	82	0.370	61	1.31	300	650	"	25	Chip sample (85 cm) 4 m N of R44400
R-44399C	75	0.300	78	0.82	200	650	"	20	Chip sample (155 cm) " " "
R-44400	161	3.25	156	8.31	600	1100	"	110	Chip sample (1.2 m) - see sketch above
R-21626	80	14.90	108	61.16	1800	1800	"	440	Grab sample (65 cm W) - see above
R-21627	24	0.096	80	0.76	85	800	"	15	Grab sample - 60 m N. of R-44400

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	FIGURE 4b: Sketch map of upper "Gash" vein (looking from North to South)
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Twenty metres to the northeast, the "Gash" vein narrows to less than one metre and is controlled by a strong foliation zone. Over the next 30 to 40 metres, the structure is largely obscured by talus and vegetation but it can be traced intermittently for several hundred metres. Approximately 60 metres north of the "Gash", quartz-clay-(tourmaline-sulphide) float (maximum vein width 20-25 cm?) dominates the vein material. This lithology is similar to float found 30 metres south of the "Gash" and suggest that the vein is zoned from tourmaline-rich to quartz-rich mineralogies. At the apex of Arsenic Ridge 120 metres to the north, the last vein material found (maximum 20 cm thick) consists of quartz (97%), minor arsenopyrite and very scarce stibnite. One rock assay from the "Gash" returned a spectacular value (69 opt Ag) but in general mineralization is sub-economic.

Quartz-sulphide vein float found 30 metres north of the 200 metre "Gash" extension is a quartz vein breccia cemented by nearly pervasive arsenates and minor (5%) sulphide (arsenopyrite + antimonides?). The underlying structure probably strikes 135^{o} and is interpreted to be of no economic significance.

Structural Zone C

Zone C contains several large scale sub-parallel foliation zones striking NNE. These structures have not been thoroughly examined but all contain float blocks of tourmaline or quartz vein and highly altered intrusive.

Prospecting of the westernmost structure located scarce small blocks of tourmaline containing only minor arsenopyrite and highly kaolinized blocks of quartz vein and intrusive. Within the metasediments, the structure appears to extend at least several hundred metres. Prospecting on the talus slope located abundant blocks of bleached hornfels similar in appearance to altered metasediments found in Structure #2 on the Zeta Grid.

A broad (10-20 metres) structure located at the top of the same ridge contains abundant blocks of kaolinized intrusive and strongly weathered tourmaline vein. A dark green soil horizon is undoubtedly from weathered tourmaline but unfortunately is only weakly enriched in arsenic. Although rock geochemical values are low within the intrusive, this zone can be traced to the contact where it is obscured by talus and possibly thick soil. Additional prospecting is warranted at this site.

A third sub-parallel structure lies 30-40 metres to the east. Cursory examination located abundant small blocks of tourmaline vein and kaolinized intrusive. This structure is at least several hundred metres long but it too is obscured at the contact and within the host metasediments.

Approximately one kilometre to the southeast, abundant blocks of kaolinized intrusive and quartz-tourmaline-sulphide vein float have been found in a 10-15 metre wide structure. Strong silver-in-soil anomalies (11 ppm) have been received from this occurrence and further prospecting is warranted.

The relationship of this structure to a zone of gossanous soils at the contact 100 metres to the northeast is unknown. Here kaolinized intrusive and blocks of bleached quartzite hornfels occur, the latter containing very narrow veinlettes of tourmaline and muscovite or sericite. Up to 15% (visual estimate) white mica occurs within the quartzite and pyrite is weakly developed. A single soil sample was moderately enriched in Cu, Pb, Zn, Ag, and Sb and strongly enriched in arsenic. More prospecting is warranted here.

At the southwest corner of Zone C, several sub-parallel northeast trending foliation zones have been found. In this area tourmaline and quartz vein float is scarce and sulphides are generally absent. No further investigation is warranted here.

Kaolinite-Limonite Alteration

Kaolinite + limonite ± (hematite) alteration is very common in all large and small scale structural elements and is ubiquitous in all quartz-and/or tourmaline + sulphide mineralized structures. In general, structures contained within the south half of the intrusion are barren of quartz or tourmaline veins but limonite and kaolinite in strongly foliated intrusive are common. Several pairs of narrow (1 cm wide), kaolinite ± (tourmaline)-bearing en echelon joint fillings are typically developed parallel to and within several metres of these major structures. Although individual joint fillings are only 2 to 5 metres long, these form discontinuous zones up to several kilometres long. These zones of weakness are strongly mineralized in the northern half of the pluton but are only weakly anomalous elsewhere.

At least two, very wide (30 metres), zones of intense kaolinization occur at the northern contact margin (Cyanide and Telephone Ridge) and are probably associated with major structural zones. However, in both cases, rock and soil geochemical values are disappointingly low. Because the Cyanide Ridge zone is poorly exposed, additional prospecting is warranted.

3-2: Mineralization on the Zeta Grid

Mineralization on the Zeta grid consists of stratiform barite, fracture related tourmaline greisen veins and sulphide bearing alteration zones.

Stratiform Barite

Approximately three metres of light orange weathering, white, finely interlaminated barite and chert(?) were found as broken felsenmeer on the Zeta grid (17+95E, 21+81N). Lithologically the host metasediments appear to be similar to those found on the Omega claims six to seven kilometres east. Because this occurrence was found late on the last camp day, little detailed stratigraphic prospecting was accomplished and only a single soil and rock sample line and trench were completed. No strike length was determined for the barite although the associated Ba-in-soil anomaly coincides well with a strong, linear Cu-Zn-Ag-in-soil anomaly (Fig.5) which treands for 500 metres across the grid from L 15+00E, 21+00N to L 20+00E, 22+00N. A weak to moderately strong VLF-EM conductor parallels

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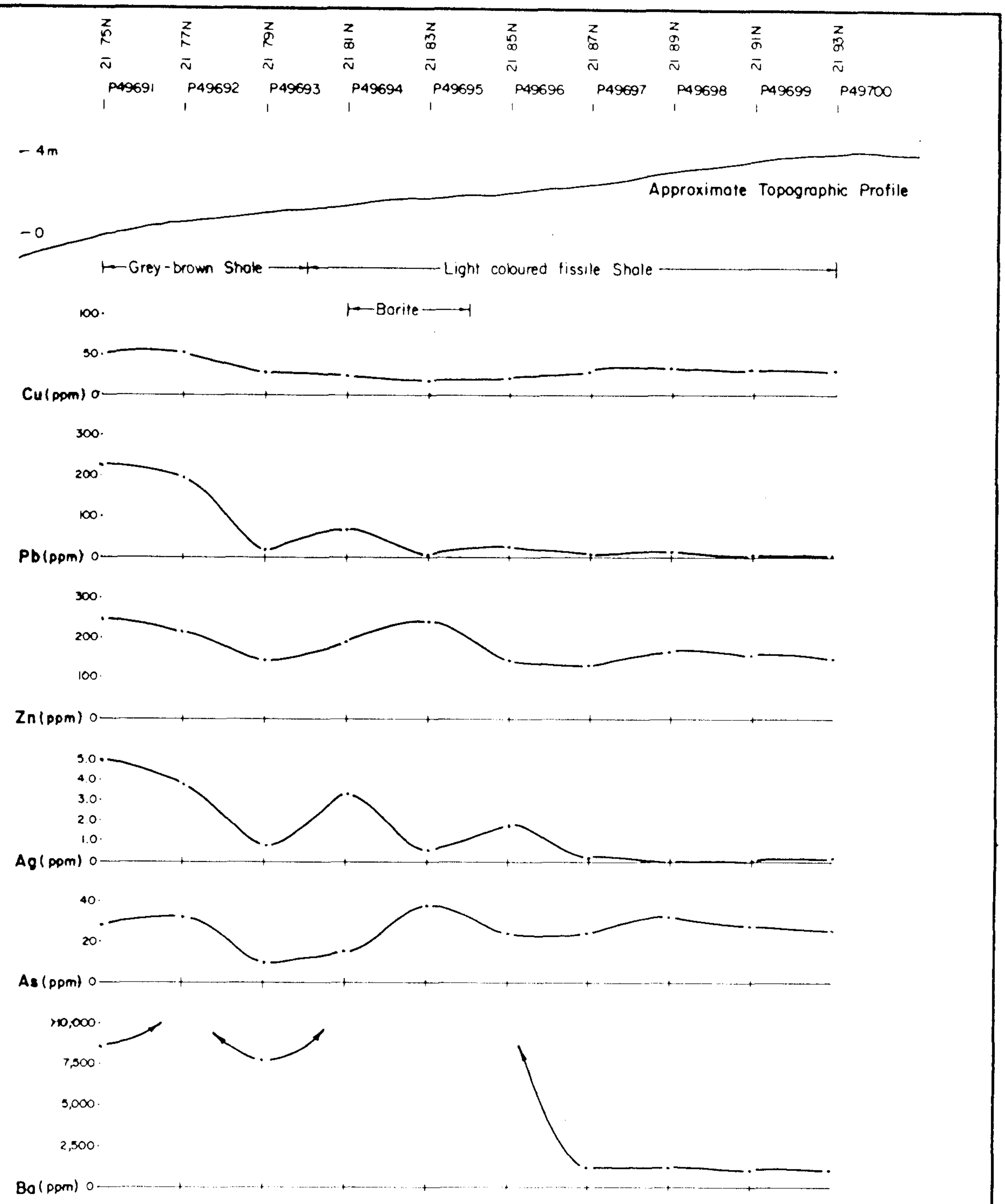

Fig. : 5

ROSS CREEK (ZETA Claims)

Soil Sample Profile across Barite Horizon at 2m. Intervals along Line 17 95E (21 75N - 21 93N).

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this trend 25 to 30 metres to the south (see Chapter 5). Unfortunately, detailed geochemical analysis (see Chapter 4) shows that the barite is contaminated by elements which are not compatible with its use in drilling mud.

Tourmaline Greisen Veins and Associated Alteration Zones

The Arsenic Ridge tourmaline greisen veins occur within the eastern portion of Structural Zone A. Here, two mineralized structural zones occur at the northern contact between the Lost Horses Stock and clastic metasediments. Structure #1 (060°) intersects the contact at a moderate angle and contains between one and three, parallel, two to three tourmaline, tourmaline-quartz ± clay ± sulphide greisen veins. These silver-antimony-tin veins are mineralogically complex and sometimes eratically mineralized. Veins range in width from 1.5 metres to several centimetres, forming, in drill core, semi-continuous veins up to 3 metres wide. The kaolinite alteration accompanying the veins is 5 to 10 times wider than the tourmaline vein. Appendix A gives petrographic descriptions of several samples (R-35226A, 35226B, 35228, and 35229) taken from trench Tr-83-1 excavated in 1983. Figures 10a to 10j illustrate the major vein lithologies intersected in drill holes (see Chapter 6) and on Map 3 their relationship to the contact of the pluton is evident. Table 9 is a Table of Formations for the drill logs and is explained in Chapter 6.

Drilling in 1984 shows that tourmaline veins are not continuous across the contact into the metasediments (although strong alteration and sporadic mineralization do occur) and that the vein structure is possibly stronger and more highly mineralized with sulphides at depth. Detailed petrographic work will be required to correlate vein mineralogy, sulphide mineralization and grades with lithological information. At present, the vein (0.9 metres to 3.0 metres wide) has been intersected over a lateral distance of 150 metres, a vertical distance of 100 metres and is open at depth. Although DDH-95-84-8, the westernmost drill hole, intersected only 90 cm of poorly mineralized tourmaline vein, the enclosing alteration zone is very strong (>10 metres wide) and soil geochemical and geophysical surveys indicate that the structure is continuous for at least 500 metres into the intrusion. The relationship between this vein system and the quartz-sulphide veins found two kilometres to the west is not known at this time.

Structure #2 (Map 3) is a weakly mineralized fracture zone which intersects the intrusion at a high angle and strikes approximately 090°. This structure is estimated from drill core to 15 to 20 metres wide and has been traced by soil geochemistry and prospecting for at least 400 metres outside of the intrusion. Alteration of the host metasediments is very intense being characterized by moderate to strong bleaching and potassium metasomatism. This has formed a light coloured, porous, and permeable rock in which atoll structures have developed around remnant quartz clasts and sulphide (arsenopyrite, pyrite, lead-silver arsenides) deposition is erratic but locally spectacular. Toward the margins of this and several sub-ordinate structures (Map 3) narrow (1-2 mm wide) muscovite and less commonly cassiterite(?) veinlettes have developed. The latter are highly dispersed and not of economic significance.

Up to three per cent pyrite is commonly developed in hornfels at the pluton contact. Detailed sampling of several zones shows this sulphide to be economically unimportant.

CHAPTER 4: GEOCHEMISTRY

4-1: Regional Geochemistry

Results of regional stream, soil, and rock sampling programs are presented in Appendices C, D, and E and on Map 4. Statistical summaries of the stream and soil sampling programs are given in Tables 4 and 5, respectively.

Stream Geochemistry

Samples were collected from all streams draining the contact of the intrusion except those draining the eastern margin, an area sampled during exploration on the Fiona Claims (Biczok, 1981). All silt samples were analyzed for Cu, Pb, Zn, Ag, As, and Sb and waters for Cu, Pb, Zn, F, U, and pH. Results indicate that water sampling has been ineffective in detecting mineralization. All water samples were of nearly normal pH.

A review of Appendix C and Map 4 shows that most base metal values are low except those in two creeks draining the western (S-44326 Zn=600 ppm, Ag=0.8 ppm, W-44327 Zn=90 ppb) and southwestern (S-20826 Zn=260 ppm, Ag=3.6 ppm, W-20827 Zn=40 ppb) contact margins and are not indicative of base metal mineralization. The former stream probably drains weakly zinc-rich strata (covered by heavy overburden in this region) and the latter creek drains possibly vein-mineralized terrain discussed below.

Because of the very arsenic-silver rich and sometimes antimony-rich nature of most vein systems, these elements have been chosen for detailed discussion.

Two streams draining the western contact are As ± Ag anomalous. The northernmost contains only elevated As-in-silt values (S-44328 As= 160 ppm, pH = 6.1) and is probably related to narrow arsenopyrite vein(s) near the contact. Silver and antimony values are low and exclude this area from further follow-up. In contrast, the southern creek contains elevated to anomalous Cu (160 ppm), Zn (290 ppm), Ag (3.6 ppm), As (300 ppm), and Sb (70 ppm) values (S-20826). These values are related to tourmaline ± quartz vein float found on a ridge 500 metres to the north (R-44355, 44356) and require further detailed prospecting in 1985.

TABLE 4

Statistical Summary of Stream* Geochemical Samples

ELEMENT	NO. OF SAMPLES	MEAN	VARIANCE	STD. DEV.	ANOMALOUS THRESHOLD**
Cu (ppm)	28	34	824.14	28.71	91.42
Pb (ppm)	28	44	7876.57	88.75	221.5
Zn (ppm)	28	147	10184.95	100.92	348.6
Ag (ppm)	28	0.63	0.62	0.79	2.21
As (ppm)***	28	165.07	43816	209.3	583.67
Sb (ppm)	25	18.28	514	22.67	63.62
Sn (ppm)	9	8.77	51.9	7.21	23.19

* Silt only, water results do not yield meaningful statistics.

** Mean + 2x Std. Dev. = Anomalous Threshold

*** Excluding a single sample with 1000 ppm As, the results for 27 samples are 134.15 18663.98 136 406

TABLE 5

Statistical Summary of Regional Soil Geochemical Results

ELEMENT	NO. OF SAMPLES	MEAN	VARIANCE	STD. DEV.	ANOMALOUS THRESHOLD
Cu	94	22.79	1019.17	31.92	86.64
Pb	94	32.74	1523.66	39.03	110.81
Zn	94	121.55	26154.40	161.72	445.0
Ag	94	0.53	1.86	1.36	3.26
As	94	113.53	293043	541.33	1196.20
As*	92	62.63	25794	160.61	383.84
Sb	62	17.60	1282	35.81	89.21

*excludes two samples, 1 @ 5200 ppm and 1 @ 960 ppm.

A single tributary to Syenite Creek (S-44280, pH = 6.4) located within the intrusion is Zn (240 ppm) and As (440 ppm) anomalous. Although silver levels are low (0.2 ppm) the sample results may reflect a distal source. If this is true, then the very high As level indicates that a strongly arsenopyrite-mineralized structure occurs within this watershed. This cirque should be examined in detail in 1985.

All major streams draining the northern contact with the exception of Stonehedge Creek are moderately to strongly arsenic rich and weakly to strongly Ag + Sb anomalous. Four samples recovered from Awesome Creek (S-44284, 44261, 44262, 44265) contain arsenic levels between 280 and 1000 ppm As. Prospecting within the source area located weakly mineralized structures within the western enclosing ridge and strongly arsenopyrite-stibnite mineralized structures in the north facing wall. These veins belong in Structural Zone A and are discussed in Chapter 3. Sample S-44263 containing 1000 ppm As was recovered from a stream draining out of talus below an arsenopyrite vein. Importantly, although base metal values are not anomalous in these creeks, they are elevated relative to creeks draining poorly mineralized intrusive.

Three locations were sampled on Cyanide Creek, one immediately below the contact within altered metasediments (S-37479), one immediately above the contact (S-37478) and a third (S-44334), four hundred metres south of the contact. Arsenic levels in all samples are moderately elevated relative to regional samples but none are strongly anomalous relative to other local samples. S-37479 (As = 200) is marginally enriched relative to S-37478 (As = 180) possibly reflecting anomalous arsenic levels in rocks at the contact although surface waters draing the Gash and Arsenic Ridge vein appear to have little or no affect on the latter sample or S-44334 (As = 100 ppm). This is particularly confusing because at least one block laced with greisen veins was found in the creek at the contact.

A single creek of normal pH (6.4) draining the east side of the Zeta grid was sampled (S-44338). This silt is moderately enriched in Zn (200 ppm) and Ag (1.4 ppm) and mildly arsenic anomalous (As = 170 ppm) and reflects the generally low levels of mineralization on this portion of the grid.

Detailed silt samples were taken on all tributaries to Arsenic Creek as a follow-up to moderately anomalous As-in-silt levels found in 1981 (Biczok, 1981) and 1982 (Jago, 1982). Of the eight samples recovered, only three contained weakly anomalous As-in-silt levels and only one (S-37403), coincident arsenic and silver anomalies. These creeks drain relatively homegenous quartz-syenite and syenite and except for several structures located in the southeast corner of the watershed, the area is poorly mineralized. The lower levels of enrichment found in samples this year and taken from the presumed source area of the 1982 anomalous results suggests that detailed sampling (250 metre spacing) inwards from the contact should be undertaken in 1985. Apparently sampling in 1984 began upstream from the source area to previously anomalous samples.

Three silt samples recovered from Stonehedge Creek (pH 6.2) contain background levels for Cu, Pb, Zn, Ag, As, and Sb except for S-35373 which is weakly enriched in antimony (Sb = 44 ppm). Prospecting on adjacent ridges located several mineralized structures (soils, maximum 11.0 ppm Ag, 190 ppm Sb) which are a probable cause for the elevated antimony levels, however, these structures strike parallel to the creek and therefore do not easily contribute directly to the geochemistry of the stream. In light of this, the interpretation of future sample results should be made with the knowledge of the ability of structures to contribute to a streams geochemistry. In some portions of the pluton, streams intersect structures at a high angle and therefore direct interaction can take place. In contrast, high angle near misses retard the ability of the stream to interact with the structure.

Soil Geochemistry

Map 4 presents the results of the 1984 soil sampling program found in Appendix D and the statistical summary is given in Table 5.

In general, structures sampled in the south half of the stock returned sub-anomalous metal-in-soil values. The large structure (20 metres x

2^{+} kilometres long) trending NW-SE and intersecting the granitic core contains only barren soils. Within the structure, the rock is heavily slickensided and the soils are very carbonate rich. J. Morin of D.I.A.N.D. indicates that such carbonate-rich structures are late stage features and of no economic importance. However, the carbonate enrichment may also represent the top of a large scale hydrothermal system.

Anomalous soils have only been collected from three localities apart from soils on the Zeta grid. A seven metre wide structure located near the west granite contact (UTM 862967) was sampled on three soil lines (P-49760-62, 49766-69, 49770-72) and returned anomalous silver and arsenic levels up to 2.6 ppm and 260 ppm, respectively. Several rock samples (R-49764-65) collected from this locality are weakly enriched in metals.

Five moderately to strongly anomalous samples were collected from a linear structure (P-35368-71) and the pluton contact (P-35367) on Pinnacle Ridge. The magnitude of Ag (11.0 ppm), As (5200 ppm), and Sb (190 ppm) values indicates that these structures are highly mineralized targets and should be examined in 1985. Notably these geochemical values are equal to or exceeded values obtained over the greisen vein on Arsenic Ridge.

Regional and detailed follow-up of stream geochemical anomalies and all geological traverses should incorporate detailed soil sampling. Prospecting in 1984 has shown that mineralization is always associated with topographically well defined lineaments. These foliation zones are easily interpreted on air photos and can be quickly assessed by several well spaced soil lines. Due to the often narrow nature of the target veins, the interval of soil sampling must be kept fairly samll, less than 10 metres. Where several structures intersect the pluton contact, several contour soil lines are an effective prospecting tool. Sampling this season indicates that silver, arsenic, and antimony are the best tracer elements.

Rock Geochemistry

Rock geochemistry and soil sampling were used as the primary exploration tools on the Zeta program. Regional samples were analyzed for Cu, Pb, Zn, Ag, As, and Sb and rarely for Au or Sn. Experience has shown that Sn and Au are only poorly enriched in the Lost Horses Stock vein systems.

Rock geochemical results are given in Appendix E and illustrated on Map 4.

In general, rock samples recovered from structures in the south half of the stock are only weakly metal enriched, arsenic for example never surpasses several hundred parts per million and silver 0.6 ppm. One exception is several tourmaline-quartz vein samples (R-44355, 44356) collected at the west-central margin of the stock. These were recovered on a ridge five hundred metres north of a strong metal-in-silt anomaly (S-20826) but do not appear to be related to the anomaly because of topographic interference. Several soil lines and surface prospecting should allow us to evaluate this occurrence more completely.

Structural Zone A

Structural Zone A contains numerous narrow quartz-sulphide veins and the Arsenic Ridge showing. The latter is discussed in Section 4-2a.

Within the Awesome Creek collection basin five rock samples were weakly to strongly enriched in base and precious metals. Weak mineralization was found in a sample (R-21650) collected from a structure within the west wall of the valley. Lead (300 ppm), silver (31.0 ppm), and arsenic (G1000 ppm) levels are elevated here but the lack of mineralized float suggests that the vein is small.

Four rock samples (R-21651-21654) recovered from three vein structures located in the south wall of the cirque all returned highly anomalous base and precious metal levels. These samples and those recovered 400 to 500 metres to the east (R-35363, 35364, 35366, 20830) probably belong to the same vein system and may be a distal manifestation of mineralization on Arsenic Ridge. Detailed prospecting between the two is very difficult due to heavy boulder talus and vegetation on valley slopes. Interestingly, within the western vein system, tin and antimony, silver, zinc and gold are antipathetic, the former decreasing with increasing elevation. In contrast, drilling on Arsenic Ridge shows that silver, lead and antimony dramatically increase with depth (see section 4-2a) and tin is erratically distributed and can increase or decrease with depth. Obviously, large differences in mineralization style must exist between these quartz and tourmaline veins.

Several rock samples recovered from the northern contact region in Zone A contain anomalous silver and arsenic levels. R-20831A was selected from a large area of altered intrusive float and contains moderately anomalous Ag (814 ppm) and arsenic (1100 ppm). Several other samples from this locality are only weakly anomalous and soil samples returned low values. However, more prospecting is warranted here due to the broad area of altered float and metal-rich nature of Zone A.

A single, coarse chip sample (R-20832) taken from the contact of the stock in Cyanide Creek returned 9.4 ppm Ag and 300 ppm As. Here, the hornfelsed metasediments are very rusty and contain several percent pyrite and thin muscovite veins. Although no further work is warranted here because of the erratic nature of rock alteration and sulphide enrichment, sample pulps should be run for antimony and tin.

Structural Zone B

Rock samples (R-49764, 49765) recovered from a seven metre wide structure located near the western margin of the granite core are weakly to moderately enriched in base and precious metals (Ag 17.0-22.0 ppm, Au 45-90 ppb). Soil sampling in the structure and these low but encouraging values indicate that more detailed prospecting should be carried out here.

Several quartz-tourmaline veins located within the granitic core contain massive sulphide (pyrite, arsenopyrite, stibnite) lenses and considerable amounts of disseminated sulphide. However, a single chip sample (R-35361, 1.4 m) recovered from this vein is only weakly metal enriched and selected grab samples (R-37492, 37493) of massive sulphide are less enriched. Maximum Ag (56.2 ppm), antimony (320 ppm), and tin (1160 ppm) levels are sub-economic.

Detailed sampling of the "Gash" vein structure produced generally disappointing results. Figure 4A is a plan view of the vein showing the distribution of grab and chip samples collected along its strike. Figure 4B illustrates a cross-section view of the vein (see Chapter 3 for a description) and gives rock geochemical results for all samples collected along its interpreted strike length.

The highest silver, lead, tin, and antimony levels were found only in samples from the central portion of the widest part of the vein (R-44399A, R-44400, R-21626) and quickly diminish in either direction within ten metres to sub-economic levels (for example R-44398). Disappointingly, quartz-sulphide rich, tourmaline-poor vein float located up to 60 metres away returned only weakly anomalous values (R-21627, 60 metres to the north, Ag = 26 ppm, Sn = 800 ppm, Pb = 960 ppm). Chip samples recovered from this years program all contained values consistent with those from previous years. Maximum values in samples recovered in 1983 (R-35237, 35238, 25241, Lane, 1983) were 173 ppm Ag across 75 cm and 0.47 percent Pb across 1.2 metres.

Selected grab samples from the same program returned 7.9% Pb and 8.76 opt Ag (R-35240) and 1.81% Pb and 9.5 opt Ag (R-35556). Maximum values in grab samples this year included 61.6 opt Ag and 14.1% Pb. The latter sample (R-21626) consists of fine-grained sulphide needles within a highly altered quartz vein(?) matrix and was taken from a 30 cm interval in chip sample R-44400 (1.2 metres). Unfortunately this particular phase does not persist laterally.

No further work should be planned on this structure because of its limited lateral extent and generally low and erratic base and precious metal values.

Two hundred metres north of the "Gash", a single sample (R-37500) of quartz vein breccia (3-5% sulphide) returned 6.5 opt Ag, 1.5% Pb, and 0.52% Sb. The limited size of the occurrence precludes further exploration.

Structural Zone C

Rock geochemical values for most veins found in Zone C are low. Quartz vein float (R-37410, 37411) found in several lineaments in the southern portion of this zone are weakly base ($<$ .14% Pb) and precious metal ($<$ 1.1 opt Ag) anomalous and represent some of the most highly sulphide-mineralized vein material found in the eastern half of the Lost Horses Stock. Several samples recovered from the pluton contact (R-49753, 21648) contain comparable metal enrichment and probably represent a better target for future exploration. Prospecting here has located a fairly extensive alteration halo about a linear structure that continues into the hornfelsed metasediments. The sediments here are rusty and/or bleached much like those found on the Zeta grid. Although all samples recovered from three structures located on this ridge in the pluton returned low values, one sample from the metasediments was enriched (R-21648, Pb = 7100 ppm, Ag = 11.0 ppm, As = 1000 ppm, Sb = 250 ppm). Additional prospecting here is warranted and should attempt to trace all lineaments within the metasediments. Soil sampling methods have been discussed above.

A single structure located near the contact in the northeast core of Zone C was not rock sampled. Soil values from this area reach a maximum of 11.0 ppm Ag, 850 ppm Zn, 310 ppm Pb, and 80 ppm Sb. This alteration zone should be prospected in detail in 1985.

4-2: Geochemistry of the Zeta Grid

Soil Geochemistry

263 soil samples were recovered from the Zeta grid. All samples were analyzed for Cu, Pb, Zn, Ag, and As and only those from the metasedimentary area for Ba. Sample results are given in Appendix F and plotted on Maps Fa to 5f. Table 6 summarizes the sample statistics.

Cu Geochemistry (Map 5a)

Anomalous copper-in-soil levels on the Zeta grid are found in the metasediments and generally are confined to a linear polymetallic anomaly which trends ENE-WSW from L15+00E, 21+00N to L 20+00E, 22+00N. Other spot highs occur on the grid at L 18+00E, 20+50N and L 20+00E, 20+50N. These are associated with highly altered hornfelses in Structures #2 and #1, respectively. Within the intrusion Cu values are all low but a contour interval of 20 ppm coincides with a curvilenear polymetallic anomaly associated with the greisen vein in Structure #1.

Pb Geochemistry (Map 5B)

Pb-in-soil values exceeding 100 ppm are considered to be anomalous. Map 5b shows that these are confined to short linear trends. The most prominent is associated with a curvilinear polymetallic soil anomaly trending eastward from L 15+00E, approximately 18+50N to L 22+00E, 22+00N. The intermittent nature of the anomaly from line 20E to 22E reflects a poorly mineralized bedrock source. The irregular pattern of contour lines at 20+00E, 20+00N is caused by the intersection of Strutures #1 and #2, and

TABLE 6

STATISTICAL SUMMARY OF ZETA GRID

SOIL GEOCHEMICAL RESULTS

ELEMENT	NUMBER of SAMPLES	MEAN $\bar{x}$ (Arith.)	STD. DEV. (Arith.) σ	ANOMALOUS THRESHOLD ($\bar{x} + 2\sigma$)
Cu	263	30.7	29.98	90.66
Pb	263	99.0	370.84	840.68
Zn	263	188.5	407.16	1002.82
Ag	263	1.29	5.588	12.466
As	263	100.3	266.22	632.74
Ba	133	1381.8	1008.41	3398.62

slumps of mineralized talus. Structure #2 is defined by a weak, discontinuous anomaly-trending off the grid at L 25+00E, 21+75N. The very high values obtained between line 19+50E and 21+00E are caused by the soil sample being contaminated by a large proportion of supergene enriched vein fragments from Structure #2 and therefore is not truly representative of the "B" horizon soils. The discontinuous Pb-in-soil anomaly associated with Structure #2 and trending to the west may be caused by a discontinuously mineralized vein or by flooding of barren soils onto normally Pb-enriched soils overlying the vein. This scenario is undoubtedly true at L 18+00E, 19+25N and L 19+00E, 19+75N but elsewhere is difficult to evaluate.

Weakly to highly anomalous Pb-in-soil levles occur discontinuously along the polymetallic soil anomaly trending from L 15+00E, 21+00N to L 20+00E, 22+00N. The strongest lead anomaly (500 ppm) is associated with anomalous Cu (100 ppm), Zn (1400 ppm), Ag (2.0 ppm), and Ba (3100 ppm) and is probably associated with a metal-rich black shale.

Zn Geochemistry (Map 5c)

Weakly anomalous (greater than 100 ppm Zn) Zn-in-soil levels occur in the intrusion over the interpreted strike length of Structure #1 excluding zones where soil flooding has occurred and are generally coincident with weakly anomalous Cu, Pb, Ag, and moderately anomalous As levels. Several sub-parallel weakly anomalous zones (L 23+00E, 19+50N to 25+00E, 20+00N and 23+00E, 20+25N to 25+00E, 21+00N) occur toward the east end of the grid. These may be associated with strong alteration zones at the pluton contact although a very high Zn on the base line probably reflects a different source.

Within the metasediments, a very strong (maximum 4000 ppm Zn), linear, zinc anomaly (L 15+00E, 21+00N to L 20+00E, 22+00N) trends ENE-WSW and is associated with weakly to moderately high Cu-Pb-Ag and Ba-in-soil levels. Because of the strong association with barium and the only weakly positive correlation with arsenic, this anomaly is interpreted to be associated with metal-rich sediments.

Siver Geochemistry (Map 5d)

Silver-in-soil anomalies generally follow three trends. Weak to moderate enrichments (1.0 ppm to 3.4 ppm) are associated with the poly-metallic (Cu, Pb, Zn, Ba) anomaly discussed above and can probably be attributed to metal-rich sediments.

Two strong trends are associated with structures #1 and #2. Associated with the first structure is a curvilinear polymetallic anomaly which typically trends fromCu, Pb, Zn, and As from L 15+00E, 18+50N through the baseline at 19+00E and off the grid at L 22+00E, 20+00N. For silver, however, the anomaly is only weakly defined (0.4 to 0.6 ppm) from L 15+00E to L 18+00E at which point it is coincident with the overall trends. Silver curiously forms a separate westerly trend at this point and diverges from the established soil anomaly towards L 15+00E, 19+50N. At this time, this divergence can only be explained by groundwater percolation downslope from silver-rich subcrop. The negative correlation with other elements suggests that mineralized subcrop is not present here.

Silver is very strong enriched between L 19+50E, 20+25N and L21+50E, 20+50N. This area occurs immediately to the west of the intersection of Structures #1 and #2 and is associated with abundant supergene enriched sulphide vein fragments within the sampled soil horizon. Several rock samples from this location indicate that weathered vein material is strongly metal enriched relative to unweathered vein material, a conclusion which agrees well with drill hole results. Curiously, silver forms a strong trend diverging from Structure #2 (21+00E, 20+50N trending to 25+00E, 21+75N) around 21+00E, 20+50N and continuing downslope to 23+00E, 20+25N and off the grid at 25+00E, 21+00N. The simplest explanation is to define a third mineralized structure here, however, soil creep and the easy mobility of Ag in groundwater are a better alternative. The positive correlation between easily mobile Ag, Zn, and As and the negative correlation between these elements and relatively immobile Pb suggests that the latter hypothesis is correct. Detailed prospecting in this area should be completed to test this hypothesis.

As Geochemistry (Map 5e)

Arsenic-in-soil anomalies demonstrate good positive correlations with the Cu, Pb, Zn, and Ag anomalies associated with Structures #1 and #2. Very high values associated with the polymetallic anomaly centred on L 20+00E, 20+50N are undoubtedly caused by arsenate-rich vein float contaminating the sample soil horizon. In this area, secondary arsenates are very well developed and have stained the rocks a light green-yellow colour.

A weak arsenic anomaly occurs generally downslope from a strong Cu, Zn, As anomaly associated with metal-rich sediments in the northwest quadrant of the grid. This author finds the arsenic association is unusual and suggests that a weak alteration zone associated with local mineralization in the Lost Horses Stock may have developed in strong foliation zones within the footwall.

The curvilinear arsenic anomaly close to the baseline in the northeast grid quadrant is coincident with moderately anomalous Ag and Zn levels. Although a subcrop source may be causing the anomaly, it is probably due to groundwaters percolating downslope from arsenic-rich subcrop.

Ba Geochemistry (Map 5f)

Barium-rich soils are generally confined to the northwest quadrant of the grid and are associated with a moderate to strong, linear Cu, Pb, Zn, and Ag anomaly. This area is interpreted to be underlain by metal-rich sediments and a three metre section of laminated barite has been found on the grid at 17+95E, 20+80N. This showing is five to ten metres north of the very strong Ba-in-soil anomaly (G10,000 ppm Ba) and is undoubtedly the cause of it.

Curiously, Ba-rich soils diverge from the polymetallic trend at L 15+00E, 21+00N and form a dog leg trend from this point to 17+00E, 20+25N and toward 18+50E, 21+00N. This second trend may be explained by undetected complex folding patterns or a second sub-parallel barite-rich horizon. This second trend does not have coincident Cu, Pb, Zn, and Ag enrichments.

Barium is enriched in two other areas. A spot anomaly (2800 ppm) occurs on line 21+50E, 22+00N and may be associated with possibly faulted portions of the two trends established to the west. A third, weak, linear anomaly generally follows the Ag, Zn, As trend established near the baseline in the northeast grid quadrant. This anomaly originates downslope to the east from spectacular Ag, As, and Pb levels associated with Structure #2 and was unexpected. The low levels of soil enrichment suggest that it is a transported anomaly and is not assoicated with a bedrock source.

In summary, three polymetallic trends have been established on the Zeta grid that are related to bedrock mineralization. Weak to strong, often discontinuous, linear, Cu, Pb, Zn, Ag, and As anomalies are associated with Structure #1 (L 15+00E, 20+95N to L 25+00E, 21+75N). "Bullseye" metal-in-soil anomalies are probably caused by weak enrichments associated with strong alteration zones in faults at the contact (see Chapter 2).

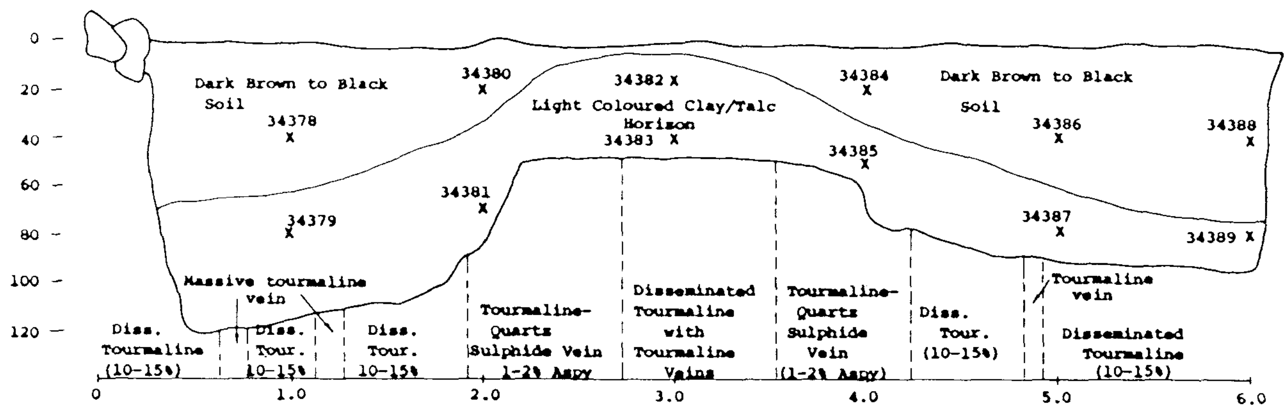
A strong correlation between Cu, Pb, Zn, Ag, and Ba exists for a linear anomaly in the northwest quadrant of the grid. This area is underlain by a three metre thick laminated barite horizon and is probably associated with metal-rich sediments. Figure 5 illustrates the change in soil geochemistry across this barite horizon and suggest that the metal-rich sediments occur in the footwall.

Zinc and barium show a positive correlation above the subcropping barite although rock geochemical values (see below, this chapter, Figure 8) do not show Zn-enrichment.

Soil Sampling in Trench Tr-83-1

B/C horizon soil samples were recovered from trench TR-83-1 on the Zeta grid (18+75E, 19+50N). Figure 6 depicts a cross-section view of the trench showing major rock lithologies and the distribution of the dark coloured "B" horizon and light to white clay-talc rich "C" horizon soils. The colour of soil outside of the trench was not determined however trenching nearby indicates that it is rusty over weakly altered syenite and brown-grey over unaltered syenite.

Examination of the trench results shows that all elements except Cu are enriched in both soil horizons overlying vein subcrop and that en-



		1.0	2.0	3.0	4.0	5.0	6.0
Cu ppm	B	18	16	18	16	22	18
	C	38	10	16	20	28	28
Pb ppm	B	54	180	1200	410	660	420
	C	4400	1500	2100	2300	1400	2500
Zn ppm	B	90	80	130	100	140	140
	C	90	30	40	80	240	140
Ag ppm	B	0.6	1.4	8.0	2.8	7.4	6.2
	C	27.0	11.0	18.0	19.0	19.0	31.0
As ppm	B	26	68	350	180	260	230
	C	420	280	360	940	760	1300

Fig. : 6

REVISED

ROSS CREEK (ZETA Claims)

Soil Geochemical Results
Trench 83 - I
(Facing West)

PROJ No.
NTS 15P14 IIBA3
DWG No.

SURVEY BY
DATE NOV 84
DRAWN BY Al
SCALE

NORANDA EXPLORATION
OFFICE

richment in the white clay-talc "C" horizon is in some cases an order of magnitude greater than in samples from the "B" horizon. Cu is enriched in neither soil horizon and in some cases Zn is enriched in the "B". Interestingly, strongly anomalous soils can be obtained from samples only 20 cm from the surface. Because many sampling programs are conducted in the early summer, a frozen A or B horizon often inhibits proper sampling producing misleading results.

These sampling results indicate that the white clay-talc layer overlying the vein does not prohibit capillary movement of metal ions as proposed by Lane (pers. comm.) in 1983 and that "B" horizon soil samples should adequately test for anomalous soils.

Rock Geochemistry

Barite:

Rock geochemical results for three barite samples are given in Table 7. Results for rock chips taken over five metre intervals over the barite occurrence are illustrated on Figure 7.

Examination of Table 7 shows that the laminated barite is highly contaminated (maximum wt.% $BaSO_4$= 80.29) by silica (up to 47.00% probably as interlaminated chert) alumina (up to 9.80%, possibly as a clay fraction with minor potassium up to 2.50%) and iron (up to 11.00%), the latter forming a light yellow to orange weathering surface on felsenmeer samples. Base metals are low within each sample and consistent with other contaminants increase slightly toward the hanging wall. Interestingly, silver is antipathetic and is highly concentrated (715 ppm) in the footwall. Shale samples (Figure 7) recovered from intermixed felsenmeer contain background values for all elements and only lead and phosphate show a weak enrichment in the shale footwall. The characteristics described above are not compatible with barite used in the drilling industry and therefore further work on this showing is a low priority.

TABLE 7

Rock Geochemical Results

Zeta Barite Showing

Element/oxide	Sample No. R-21673	R-21674	R-21675
Cu (ppm)	9	7	28
Pb (ppm)	6	4	14
Zn (ppm)	39	48	76
Ag (ppm)	7.5	4.3	0.5
As (ppm)	18	12	45
Hg (ppb)	10	25	10
V (ppm)			
Cr (ppm)			
Ca*(W.L.)/Ca(N.L.)	L5/121	L5/102	L5/85
Sr*(W.L.)/Sr(N.L.)	L5/18	L5/21	L5/7
Sr Total (ppm)	740	790	270
C Total (%)	0.24	0.50	0.61
Ba (%)	41.3	49.34	15.31
SO_4 (%)	28.21	30.95	10.76
Barite (Wt.%)	69.58	80.29	26.07
L.O.I. (%)	1.50	0.85	2.95
SiO_2 (%)	22.00	12.00	47.00
TiO_2 (%)	0.15	0.08	0.40
Al_2O_3 (%)	4.50	2.00	9.80
Fe_2O_3 (%)	2.00	2.50	11.00
K_2O (%)	0.30	0.20	2.20
Na_2O (%)	L0.01	0.05	0.15
P_2O_5 (%)	0.12	0.09	0.17
MnO (%)	L0.1	L0.1	L0.1
MgO (%)	0.5	0.5	0.75
CaO (%)	L0.5	L0.5	L0.5
Sp.Gr. (cc)	3.6	3.9	2.9

W.L. = Water leach
N.L. = 3% NaCl leach
L.O.I. = Loss on Ignition
* in ppm

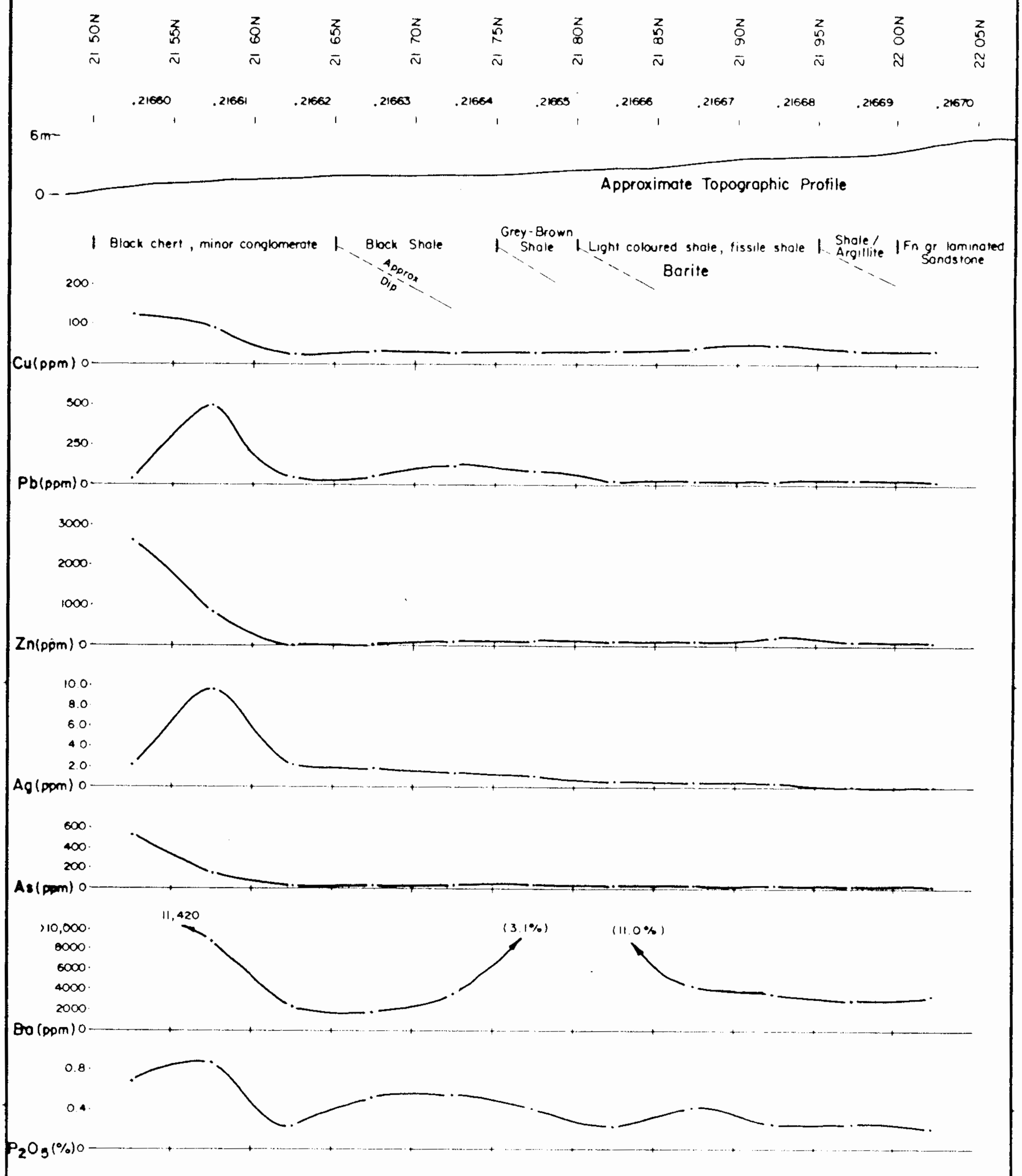


Fig. 7

Rock sample from 18 00E, 21 50N, Top of 4000 ppm Zn-in-soil anomaly.
Cu = 30 ppm, Pb = 8 ppm, Zn = 65 ppm, Ag = 1.3 ppm, As = 13 ppm, Ba = 5580 ppm, P_2O_5 = 0.25%.

REVISED	ROSS CREEK (ZETA Claims)
	Rock Chip Sample Profile across High Zn & Ba Soil Anomalies at 5m. Intervals along 17 95E (21 50N – 22 05N).
PROJ No.	SURVEY BY ______ DATE NOV 84
N.T.S. 115P14-116A3	DRAWN BY AI SCALE As shown
DWG No.	NORANDA EXPLORATION OFFICE Whitehorse

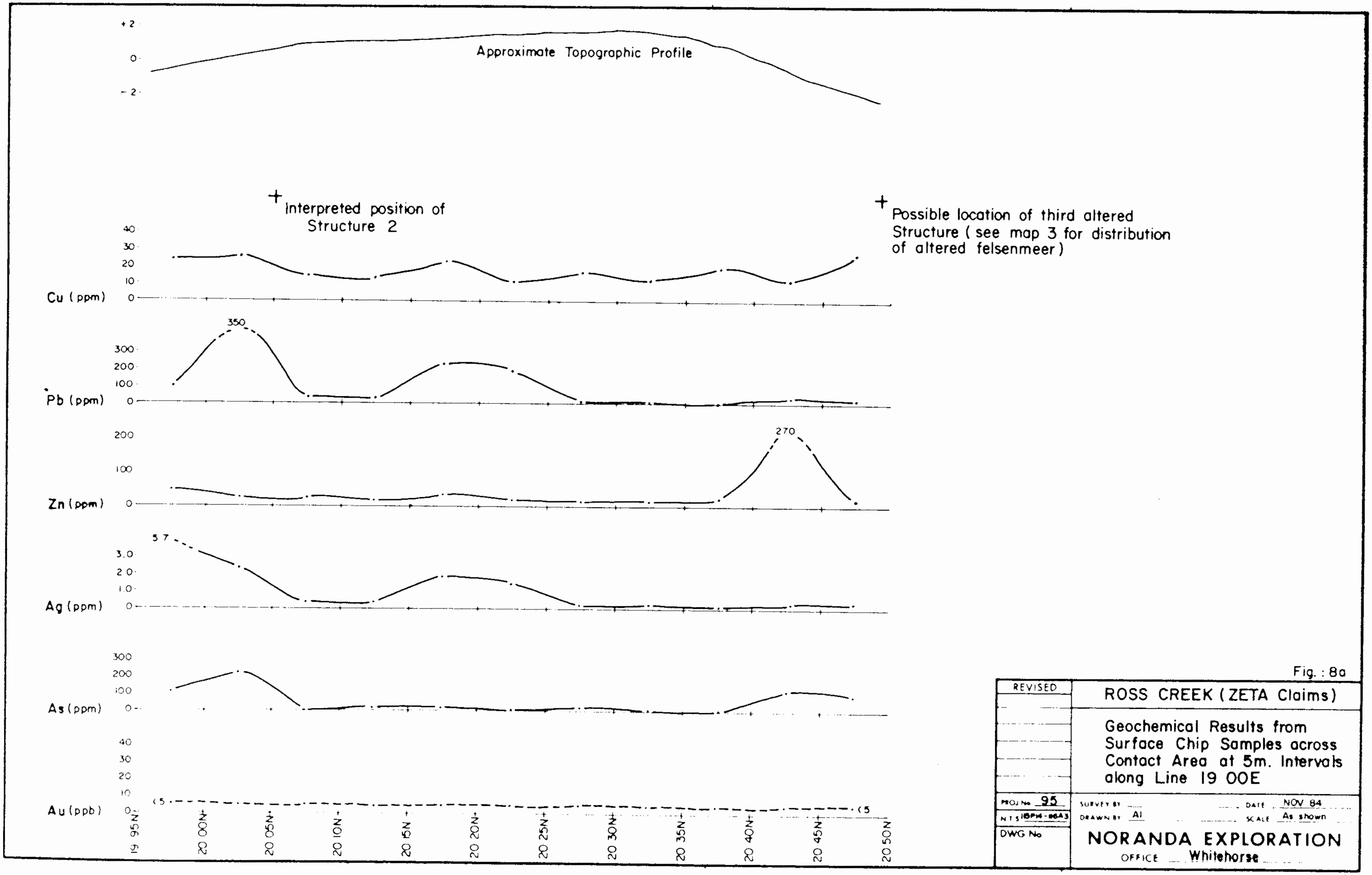
High Base Metal Anomaly at L 18+00E, 21+50N

Figure 7 illustrates results from rock chips collected over five metre intervals across a tremendous zinc-in-soil (4000 ppm) anomaly on the Zeta grid. Copper-silver-and barium-in-soil levels at this location (Cu = 180 ppm, Ag = 3.4 ppm, Ba = G10,000 ppm) are all enriched and suggest that the source is from an underlying metal-rich shale. Interestingly, lead (340 ppm) is anomalous only in a soil sample taken 25 metres to the south. The sampled interval unfortunately did not cover the zinc-rich strata as the author believed the anomaly had been transported slightly downhill. On Figure 7, rock sample results are elevated to strongly anomalous only in the first two sample intervals. Future sampling should be done at least within the interval 21+25 to 21+50N on line 18+00E.

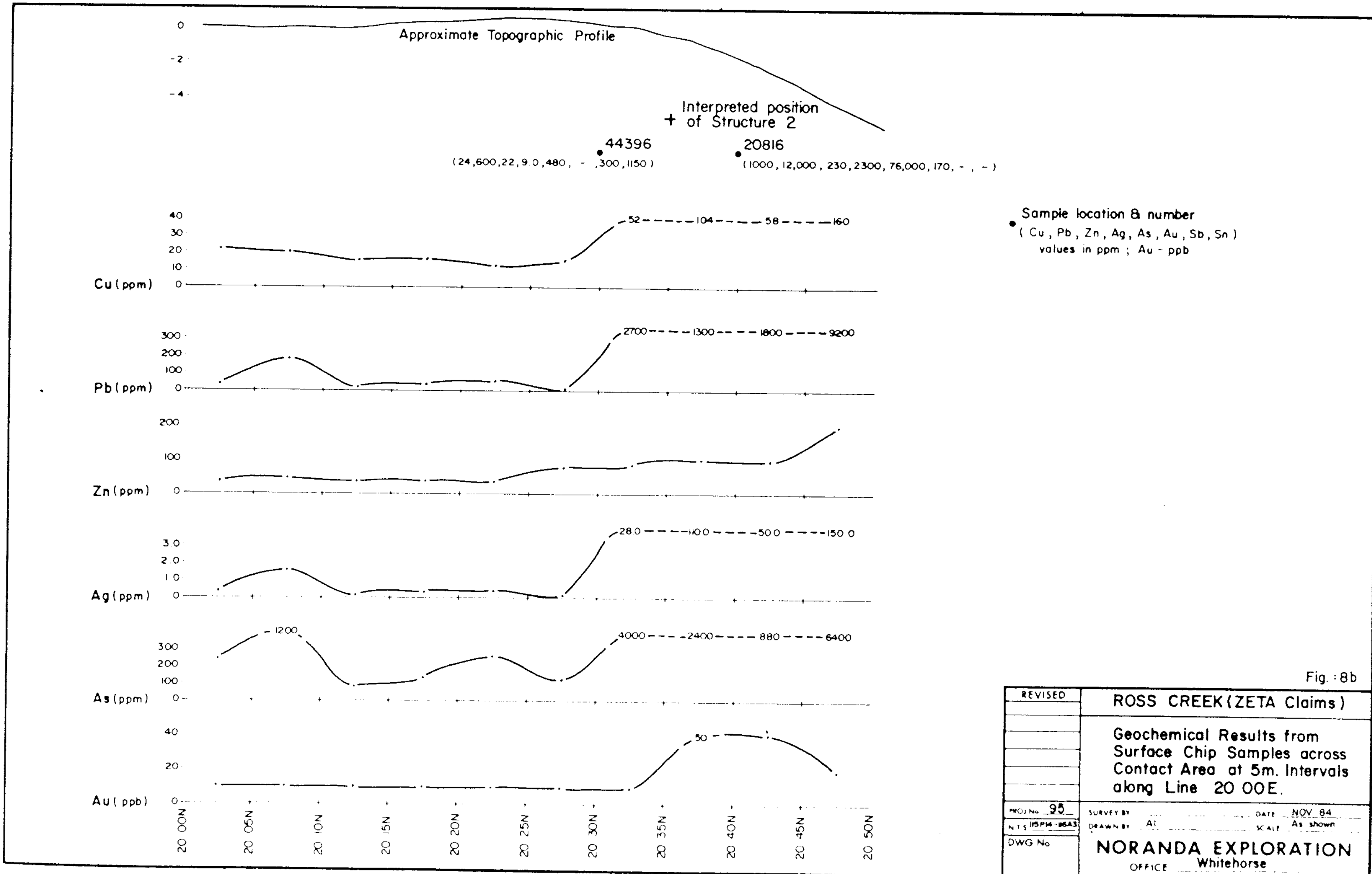
Rock Geochemistry Associated with Structure#2

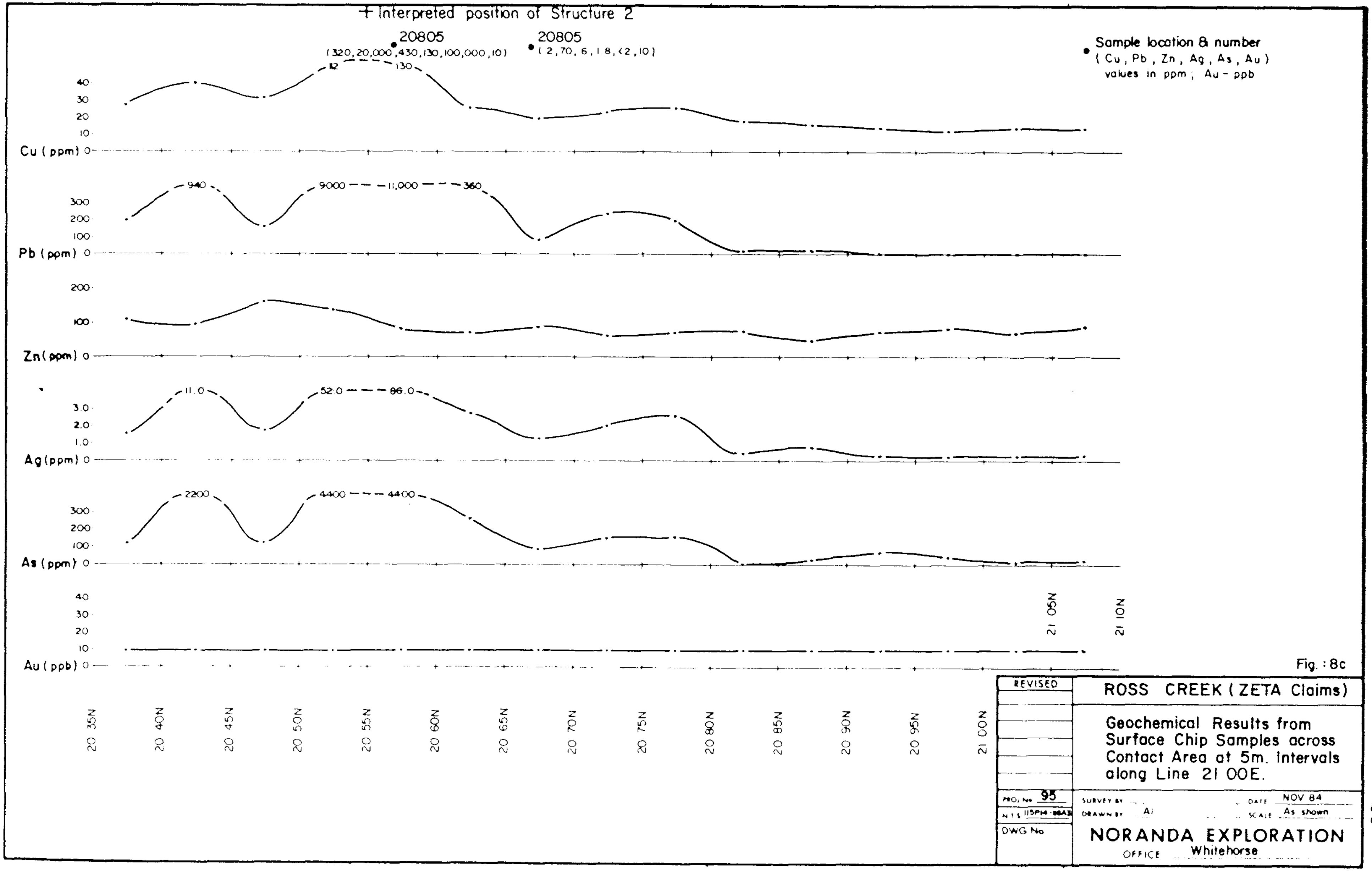
Surface chip samples were taken over five metre intervals along three grid lines to more accurately define the position of Structure #2. In the field, the Structure was identified by the occurrence of very bleached float (see Chapter 4, Mineralization) or by arsenate-stained float (see also Chapter 4) and eventually within drill holes by bleached drill core or elevated rock geochemistry. Structure #2 also is defined by a 150 metre long very strong soil anomaly (maximum Ag = 87 ppm, maximum Pb = 3800 ppm, maximum As = 3200 ppm) although drill core assays failed to duplicate the maginitude of any surface samples. Figures 8A, B, and C depict changes in base and precious metal values leading up to the zone or away from. Unfortunately, the Structure was generally located on a hillside (line 20+00E) or was covered by soil and rock fragments so only sample line 21+00E presents a section across the zone. Even in this section, however, the south end was partially covered by soil and the surrounding metal-poor host could not be sampled.

Section 19+00E is least well mineralized of the three sections but still shows strong enrichment in lead (up to 350 ppm), silver (5.7 ppm), and arsenic (200 ppm). As expected from soil results, copper and zinc are background and gold was below detection limit. Also evident is a strong lead-silver, arsenic absent association for samples taken between



Approximate Topographic Profile
+2
0
-2
Interpreted position of Structure 2
Possible location of third altered Structure (see map 3 for distribution of altered felsenmeer)
Cu (ppm)
40
30
20
10
0
Pb (ppm)
350
300
200
100
0
Zn (ppm)
270
200
100
0
Ag (ppm)
5.7
3.0
2.0
1.0
0
As (ppm)
300
200
100
0
Au (ppb)
40
30
20
10
0
<5
<5
19 95N
20 00N
20 05N
20 10N
20 15N
20 20N
20 25N
20 30N
20 35N
20 40N
20 45N
20 50N
Fig. : 8a
REVISED
ROSS CREEK (ZETA Claims)
Geochemical Results from Surface Chip Samples across Contact Area at 5m. Intervals along Line 19 00E
PROJ No 95
NTS 115P14-116A3
DWG No
SURVEY BY
DRAWN BY AI
DATE NOV 84
SCALE As shown
NORANDA EXPLORATION
OFFICE Whitehorse


Approximate Topographic Profile
0
-2
-4
Interpreted position of Structure 2
44396
(24,600, 22, 9.0, 480, - ,300, 1150)
20816
(1000, 12,000, 230, 2300, 76,000, 170, - , -)
Sample location & number
(Cu , Pb , Zn , Ag , As , Au , Sb , Sn)
values in ppm ; Au - ppb
Cu (ppm)
40
30
20
10
0
52
104
58
160
Pb (ppm)
300
200
100
0
2700
1300
1800
9200
Zn (ppm)
200
100
0
Ag (ppm)
3.0
2.0
1.0
0
28.0
110.0
50.0
150.0
As (ppm)
300
200
100
0
1200
4000
2400
880
6400
Au (ppb)
40
20
0
50
20 00N
20 05N
20 10N
20 15N
20 20N
20 25N
20 30N
20 35N
20 40N
20 45N
20 50N
Fig. : 8b
REVISED
ROSS CREEK (ZETA Claims)
Geochemical Results from Surface Chip Samples across Contact Area at 5m. Intervals along Line 20 00E.
PROJ No. 95
N.T.S. 115P14 - 116A3
DWG No
SURVEY BY
DRAWN BY AI
DATE NOV 84
SCALE As shown
NORANDA EXPLORATION
OFFICE Whitehorse



+ Interpreted position of Structure 2
20805
(320, 20,000, 430, 130, 100,000, 10)
20805
(2, 70, 6, 1.8, <2, 10)
Sample location & number
(Cu, Pb, Zn, Ag, As, Au)
values in ppm; Au - ppb
Cu (ppm)
Pb (ppm)
Zn (ppm)
Ag (ppm)
As (ppm)
Au (ppb)
112
130
940
9000
11,000
360
11.0
52.0
86.0
2200
4400
4400
20 35N
20 40N
20 45N
20 50N
20 55N
20 60N
20 65N
20 70N
20 75N
20 80N
20 85N
20 90N
20 95N
21 00N
21 05N
21 10N
Fig. : 8c
REVISED
ROSS CREEK (ZETA Claims)
Geochemical Results from Surface Chip Samples across Contact Area at 5m. Intervals along Line 21 00E.
PROJ. No. 95
SURVEY BY
DATE NOV 84
DRAWN BY AI
SCALE As shown
DWG No
NORANDA EXPLORATION
OFFICE Whitehorse

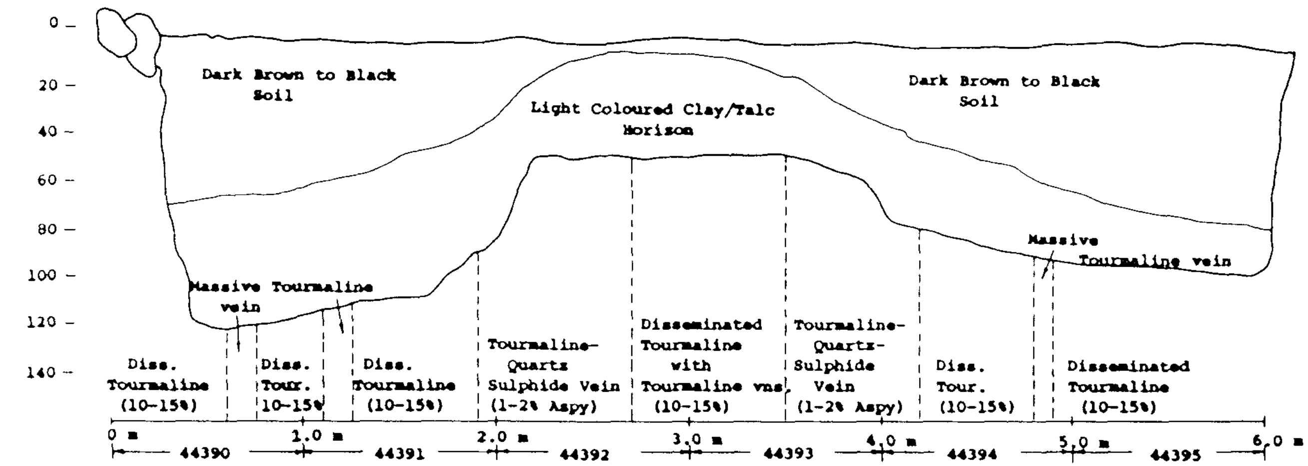
20+15E and 20+25N. A third possible structure is indicated by moderately elevated values recovered near the end of the sample line. This was later confirmed by a short traverse.

Section 20+00E is unique in that all elements analyzed are anomalous and that the Structure has a sharp hanging wall (interpreted from drill core) contact. Two rock samples recovered along this interval demonstrate the upgrading nature of sample weathering. Sample R-44396 was taken from relatively fresh sulphide bearing outcrop and although the sample itself is highly altered, base and precious metal levels are at least an order of magnitude (compare Ag 9.0 ppm vs. 3200 ppm) less than levels in a weathered sample (R-20816) of similar parentage. This relationship readily shows how soil sampling in rock chip contaminated "A" horizon soils can lead to exaggerated, supposedly "B" horizon soil anomalies.

Section 21+00E demonstrates the highly erratic nature of mineralization within these structures and the powerful "bleaching" nature of the metasomatic fluids. Two rock samples (R-20804, R-20805) are very similar in appearance, both being highly altered, vuggy quartzites except that the latter contains up to 10% arsenopyrite. Rock geochemical values are highly contrary, the former containing background to sub-background levels (Cu = 2 ppm, Pb = 70 ppm, Zn = 6 ppm, Ag = 1.8 ppm, As = L2 ppm, Au = 10 ppb) and the latter being highly enriched in lead (2%), silver (130 ppm), and arsenic (10%). This conflict within similar lithologies may help to explain the poorly mineralized nature of drill core samples from Structure #2 and demonstrates that mineralization here is highly erratic.

Rock Sampling of Trench Tr-83-1

Figure 9 depicts a section looking west across Trench TR-83-1 (L 18+75E, 19+50N) and compares geochemical results obtained from chip samples in 1983 to those obtained in 1984. In general, sample results are similar although lead and silver values returned in 1983 are usually higher and copper and zinc values usually lower than the 1984 results. Because of the comparitive nature of this study, individual lithologies were not sampled and therefore cannot be compared directly to drill core results.



	44390	44391	44392	44393	44394	44395
Cu (ppm)	190 (155)	200 (220)	210 (300)	350 (48)	140 (230)	26 (41)
Zn (ppm)	160 (50)	110 (65)	84 (70)	88 (55)	56 (50)	52 (30)
Sn (ppm)	330 (360)	500 (2900)	740 (840)	460 (265)	330 (1050)	520 (220)
Sb %	0.64	2.16	1.42	0.90	0.81	0.25
Pb %	0.72 (0.85)	1.70 (2.42)	1.27 (2.50)	0.69 (.35)	0.65 (1.55)	0.30 (0.36)
Ag GMT/OPT	322/9.40 (405/11.8)	333.3/9.73 (460/13.4)	211.6/6.18 (355/10.4)	102.9/3.00 (39.0/)	209.5/6.12 (350/10.2)	32/0.93 (107/3.1)
As (ppm)	16,000 (G1000)	10,000 (G1000)	16,000 (G1000)	23,000 (G1000)	16,000 (G1000)	21,000 (G1000)
Au (ppb)	(15)	(20)	(L5)	(L5)	(5)	(5)

1983 values in parenthesis

Fig.: 9

REVISED	ROSS CREEK (ZETA Claims)
	1984 Rock Sampling Program - Trench 83-1 (Facing West)
PROJ No 95	SURVEY BY — DATE NOV 84
NTS 115P14 116A3	DRAWN BY AI SCALE
DWG No	NORANDA EXPLORATION OFFICE Whitehorse

CHAPTER 5: Geophysics - VLF-EM Survey

Raw data profiles and contoured Fraser Filtered VLF-EM data together with a structural interpretation of the Zeta grid area are given on Maps 6A and 6B. The survey was conducted with a Geonics EM-16R instrument; readings were taken every 25 metres except in anomalous areas where the spacing was 12.5 metres. The angle between the Hawaii transmitter (23.4KHz) and the mineralized structures is approximately 30^{o}.

5-1: Anomaly Interpretation

Raw and contoured data defined seven significant conductive zones (A to G). "A" is a linear anomaly (350 metres) associated with Structure #1 which hosts Ag-Pb-Sb-rich tourmaline-greisen veins. The strongest EM responses occur on L 19+00E, 19+75E, and L 18+00E, 18+75N, the former possibly caused by ice found in a trench (Tr-84-2) on L 19+00E and the latter caused by the water-rich(?) intersection of Structure #1 and possibly a subsidiary structure associated with anomaly "A".

Anomaly "B" is a curvilinear anomaly, 650 metres long, which trends across the grid from L 15+00E, 20+62N to approximately L 21+00E, 20+50N. Mapping and soil geochemistry show that the anomaly may be associated with graphitic chert and shale within the footwall of a sequence of metal-rich shales and bedded barite. The EM anomaly is, in places, 20 to 30 metres south of the linear geochemical anomaly. The interpreted shape of anomaly "B" conforms well with the structural interpretation, faults (Structure #1(?), 3, 4) having displaced the conductive horizon and broadened the EM response.

Anomaly "C" is a broad, linear anomaly (400 metres) that has not been adequately explained. Mapping suggests that the eastern portion is related to intense clay alteration and conductive water-filled foliation zones associated with subcropping syenite dykes, however the central and western portions are unresolved.

Anomaly "D" is a short (150 metres on the grid), linear anomaly associated with the interpreted fault zone "3". No coincident geochemical association occurs here and outcrop exposure in the intrusion is poor.

Anomalies "E^{I} and E^{II}" are very irregular, broad, possibly multiple conductive zones. Anomaly E^{II} may be associated with fault zone "4", however, E^{I} similarly would require several parallel conductive fault zones. There is no coincident parallel geochemical anomaly associated with anomaly "E" although a persistent Pb, Zn, As-in-soil anomaly cross-cuts it at a high angle.

Anomaly "F" is a short (150 metre long), linear anomaly cross-cutting the intrusive contact. The occurrence of altered metasedimentary float outside of the intrusive suggests that the conductive zone is associated with a weakly mineralized, probably wet, fault or foliation zone.

Anomalies "G^{I} and G^{II}" are associated with a geologically interpreted fault at the pluton contact but are displaced 25 to 50 metres northward. This relationship suggests that the conductive zone is also a broad, water-bearing foliation zone. Anomaly G^{II} is coincident with a weak although linear Ag-Zn-As-in-soil anomaly, however the latter may not be associated with a bedrock source.

CHAPTER 6: Diamond Drilling

6-1: Introduction

Ten NQ-diamond drill holes, totalling 883.06 metres/2,896.5 feet, were completed on the Zeta grid between July 8 and August 19, 1984. A "small-38" diamond drill and four drillers on contract from Arctic Diamond Drilling of Whitehorse, Yukon were used for the job. July diamond drilling commenced after mobolization of the drill from the Tak property and was terminated on July 21st, after the completion of seven holes, so that a proper assessment of drill results could be made. Drilling recommenced on August 9th, after the completion of a surveyed grid and was terminated on August 20th with the completion of hole number ten. Table 8 summarizes drilling on the property with reference to both the old and new surveyed grids. Drill hole locations are illustrated on Map 3.

6-2: Drill Hole Legend

The drill hole legend is given in Table 9 and shown on each drill section in Figures 10a to 10j (Back pocket).

Unit 1a is a fine to medium grained quartzite hornfels with typically less than 1% pyrite or other sulphides. The thickness of bedding is commonly obscurred due to the massive nature of the hornfels although bedding laminations are fairly common in silty equivalents. Where highly altered the rock is similar in appearance to rocks from Structure #2 described in Chapter 2. Coarse clastic quartzites to pebbly quartzites comprise Unit 1b. These essentially are a coarse to pebbly equivalent of Unit 1a although field mapping suggests that some are chert pebble conglomerates. Clasts within alteration zones are almost completely obliterated and only a lightly coloured vestige remains. Unit 1c is usually interbedded with the former lithologies. Laminations are typically less than 1 cm and form pairs of siliceous laminae with highly altered (to clay), mafic-rich laminae. Grain size in either type is fine grained. Units 1d to 1g comprise the alteration assemblages associated with these sediments. Alteration occurs within Structures #1 and #2 (DDH-3, 5, 9, 10) and beside syenite sills and dykes encountered in DDH-5 and DDH-9. Clay veins with minor limonite (Unit 1d) are the most common alteration assemblage and are typically manifested as tiny, anastomosing, limonitic clay veinlettes. The proportion of these veinlettes decreases with distance from the syenite sills where contact alteration is intense enough to form a clay mush from a hornfelsed quartzite. Unit 1e is a hematitic variety of Unit 1d and typically occurs at the footwall and hanging wall contacts of syenite intrusions in DDH-5 and DDH-9. No sulphide mineralization was noted with either Unit 1d or 1e. Unit 1f is a sulphide bearing equivalent of Units 1d and 1e and is characterized by often intense bleaching of the metasediments and by one to three percent arsenopyrite and pyrite. Arsenate staining is developed on cleavage and fracture surfaces but is poorly developed compared to equivalent strata at the surface. The highest geochemical values are associated with this lithology. Unit 1g is typically developed peripherally to the mineralized zones. Both limonite and manganese form on fracture and cleavage planes although the latter is characteristic of relatively unaltered rocks.

Units 2a, 2b, and 2c are equivalent to the same units found in Table 2 and are not described here. Units 2d to 2l comprise alteration assemblages associated with vein lithologies (Unit 3) described below. Unit 2d refers to weakly to completely developed, generally beige coloured kaolinite and is not used to indicate the white kaolinite or clay-kaolinite mixture found in very mildly foliated and weathered(?) footwall and hanging wall intrusive. Typically beige kaolinite is limonite poor and often forms as a massive lithology very close to vein sections. Porous banding is commonly developed although the dissolved mineral species or lateral continuity of the porosity is unknown. All gradations between weakly altered to completely replaced intrusive characterize Unit 2e. This generally is simply a limonite equivalent of Unit 2d, but it also characterizes more the weakly altered syenites. Drill core examination shows that most or all of the limonite is derived from hornblende and biotite breakdown and therefore the original lithology becomes scarcer as the vein core is approached. Limonite may be pervasive, especially in completely kaolinized intrusive, or more commonly, is concentrated around grain boundary vestiges in weakly to moderately altered intrusive. Unit 1f is a weakly hematitic equivalent of Units 1d and 1e and is scarce in all of the drill holes. In general, this Unit is confined to kaolinite alteration near vein material (Unit 3aII) which is also hematitic. Unit 2g appears to be a post-kaolinization phenomena which may preceed tourmalinization. Typically this lithology contains massive kaolinite ± limonite ± scarce ($<1\%$) disseminated tourmaline. Clay alteration of this assemblage, especially the kaolinite, often is zoned away from a very sharp contact with a clay vein such that the kaolinite becomes increasingly fresher and harder. Clay never exceeded 30 to 40% of this lithology although sometimes the contact with the adjacent clay vein is difficult to interpret due to the amount of clay present. Unit 2h differs from a similar lithology, Unit 3d, in that the former is barren of any mineralization while the latter appears to be very complexly mineralized and possibly is simply a highly altered greisen vein.

Unit 2h is a very soft white to cream-white clay-talc(?) mixture. Core examination indicates that it is probably a highly foliated, clay-talc(?) altered kaolinite zone although in some instances the contacts with other units including 2e, 2f, and 2g are very sharp. Unit 2i refers to more than typical amounts of limonite and manganese association with a particular rock lithology or alteration type. This unit is most common in poorly altered, but highly foliated intrusive and occasionally is silver-bearing. These foliation zones typically vary in width from a few centimetres to 30 to 40 centimetres and may occur as parallel or numerous interwoven zones. Unit 2j is very scarce and this author was not sure that one of the components was chalcedony. This drill section (10 to 15 cm) occurred within a zone of complete kaolinization without any clay-talc alteration and is the second reported occurrence of chalcedony on the Zeta grid. Unit 2k encompasses only biotite alteration of hornblende within weakly kaolinized syenite. This alteration stage is intermediate between very weak chloritization of hornblende and strong limonitic alteration of the intrusive before entering strong kaolinization in the footwall and hanging wall of the greisen veins. Unit 21 has been seen in core only in drill holes six and ten. When wet, it appears to be turquoise-blue in colour and upon drying appears blue-green. The exact paragenesis of this material is not known, however, it may be an alteration product of the more normally massive beige kaolinite. Contacts between the two are irregular and the coloured variety appears in some instances to cross-cut the beige kaolinite.

Unit 3 contains all of the vein lithologies. Descriptions are necessarily short because of the complex mineralogy of these greisen veins and are supplemented by passages in Appendix A. Unit $3a_I$ is a three-tourmaline, tourmaline + quartz ± sulphide ± clay ± limonite vein. The three tourmalines are related to three mineralization cycles, the first generation producing coarse, radial aggregates of black tourmaline intergrown with quartz, the second a non-pseudomorphic, blue-green, felted tourmaline in irregular patches, often after first generation tourmaline and in breccia veins, and the third, tiny (maximum 3 to 4 mm across), radial aggregates of translucent, brownish tourmaline, randomly distributed in the core (see Appendix A, sample description R-35226A). The proportion of tourmaline varies in the core from 30% to 65%, commonly with equal amounts of generation one and two and only a few percent of generation three tourmaline. Quartz (25%-40%) occurs as anhedral patches and euhedral crystal aggregates, occasionally replacing early mafic minerals but generally occurring as a late stage mobilate. Tourmaline needles commonly form as inclusion in quartz. Sulphide and oxide minerals never exceed eight percent combined and include in decreasing order of abundance, secondary arsenate, jamesonite-boulangerite, arsenopyrite, cassiterite-rutile, sphalerite, scheelite, and covellite. A detailed description of their parageneses is found in Appendix A. (see sample description R-35226A, R-35226B, R-35228, and R-35229).

Sericite is the primary clay mineral and typically forms as fine-grained aggregates and sheaves replacing both tourmaline and quartz. This secondary mineral generally forms less than five percent of the vein material except near gradational, highly altered vein contacts. Limonite is a typical breccia vein component within 50 to 75 metres of the surface. At that point, it diminishes to less than one to two percent, its place possibly being taken by hematite. Porosity in this lithology decreases from 10 to 15% near the surface to 5 to 10% at minus 100 metres.

Unit $3a_{II}$ is simply a brecciated, hematitic equivalent of Unit $3a_{I}$ in which brecciation is no longer confined to narrow veinlettes and hematite is strongly (5 to 10%) developed. Core examinations show that this lithology is commonly associated with the footwall of the tourmaline veins although the zones probably are highly irregular between drill holes.

Unit $3b_{I}$ is a two generation tourmaline vein similar in mineralogy to Unit $3a_{I}$ except that the third generation tourmaline is very scarce or absent. This lithology characterizes several deep drill intersections of approximately 100 metres below surface. Evidently these veins are vertically zoned as secondary alteration and porosity decreases with depth. No thin section descriptions are available for this unit.

Unit 3c is a one tourmaline, tourmaline vein with scarce to absent quartz, sulphide, limonite, and manganese. These veins are typically narrow (less than 3 to 5 cm) and common dissect symmetrically, zones of disseminated (10 to 15%) radial aggregates of black tourmaline. Kaolinization of the host is complete and tourmaline commonly replaces kaolinite at vein contacts. This lithology is incipient to large scale tourmalization.

Unit 3d is similar in appearance to Unit 2h except that the latter contains no tourmaline nor is it geochemically anomalous. Unit 3d is either a clay-tourmaline vein, an extensively clay-altered tourmaline vein, or, a clay altered, disseminated tourmaline replacement zone. Clay/talc dominates this unit but this may grade into dominantly tourmaline vein or to smeared or disseminated tourmaline with highly foliated clay/talc assemblages predominating. The commonly high silver assays (7.8 opt Ag) suggest that this lithology is a highly clay/talc altered tourmaline vein.

6-3: Drill Hole Summaries

The following section provides a brief description of the location, purpose, and results of each diamond drill hole. Detailed logs are given in Appendix G and individual drill sections are presented in Figure 10 (in pocket).

DDH-95-84-1 (-45/335^{o}, Figure 10a)

This drill hole was collared to intersect the vein between trenches 83-1 and 84-1. The hole successfully tested the vein and intersected two weakly mineralized sections, the first containing 2.6 metres of 2.38 opt Ag, and the second, 1.3 metres of 3.38 opt Ag. Interestingly, the best grade intersections were in highly clay-talc-altered tourmaline vein, not in relatively fresh tourmaline vein.

DDH-95-84-2 (-70^{o}/335^{o}, Figure 10b)

The hole was collared from the same set-up as DDH-1 to intersect the vein at a vertical depth of 30 metres, approximately 20 metres below DDH-1. Mineralization was stronger in this hole and occurred over a significantly wider intersection (7.5 metres of 4.6 opt Ag and 1.1 of 7.8 opt Ag). Drill core examination shows that although veins lithologies are very complex, reasonable correlation can be made between holes.

DDH-95-84-3 (-45^{o}/335^{o}, Figure 10c)

This drill was collared to intersect the vein 50 metres east of drill holes 1 and 2 and 10 metres east of trench 84-1. The drill hole successfully tested the vein returning 5.3 metres of 4.26 opt Ag. The footwall of the section occurred at the monzo-syenite contact. The fracture zone noted in drill section No. one is present several metres within the metasediments.

DDH-95-84-4 (-70^{o}/335^{o}, Figure 10d)

This drill hole tested the structure approximately 20 metres beneath DDH-3 and returned a disappointing 0.9 metres of 2.88 opt Ag. Although drill hole lithologies are similar between the two holes in this section, mineralization occurs over a considerably narrower distance at depth and is associated with clay-altered tourmaline vein rather than fresh tourmaline vein. The intrusive/metasediment contact was not intersected in this drill hole.

DDH-95-84-5 (-45°/335°, Figure 10c)

This hole was collared to intercept at depth, a very strong Pb (2800 ppm) + As (3200 ppm) + Ag (87 ppm) anomaly centred on line 20+00E at 20+50N. Ninety percent of the section intersected metasediments, most of which were strongly fractured, and occasionally, highly clay altered, and weakly arsenate-stained. Because of the highly fractured nature of the metasediments, water return was lost eight times, finally resulting in hole abandonment at 80.5 metres when water loss was complete and the hole began to block and cave. It is not sure if the drill hole intersected the target although geochemical results show that a weakly mineralized intersection (4.5 metres of 0.84 opt Ag) was encountered within the proposed target envelope. The core in this section is similar in appearance to that encountered at surface in the vicinity of the soil anomaly, but preliminary assay results are marginally less. Within the 4.5 metre intersection, one 0.9 metre section returned 1.94 opt. Two narrow tourmaline veins occurred in the 4.5 metre section, but were not strongly silver enriched.

DDH-95-84-6 (-55°/335°, Figure 10f)

Drill hole No. 6 was collared to intersect the vein approximately 50 metres west of DDH-1, 2, 7 and at a vertical depth of 50 metres. This hole intersected well developed tourmaline-quartz greisen. Significantly, this is the deepest intersection of relatively fresh vein material and contains the most abundant sulphide (3.5% arsenopyrite) recorded in any holes. The prominent hematized footwall fracture zone noted in drill sections No. 1 and 2 is strongly developed in this section and is coincident with high grade mineralization. This intersection shows that the vein is open at depth and along strike to the west.

DDH-95-84-7 ($-55^{\circ}/335^{\circ}$, Figure 10g)

This hole was collared to test the vein encountered in DDH-1 and DDH-2 at a vertical depth of approximately 50 metres. The tourmaline vein in the mineralized sections is less altered than in the overlying holes and is of much higher grade. In general, the footwall and hanging wall alteration zones become more competent and possibly, more siliceous with depth. A prominent hematite stained fracture zone has now been established between the three holes within the footwall of the vein.

DDH-95-84-8 ($-56^{\circ}/335^{\circ}$, Figure 10h)

DDH-8 was collared approximately 50 metres west of DDH-6 to test for a westerly extension of the greisen vein in Structure 1. Although the hole intersected only low grade silver mineralization (2.5 metres of 0.54 opt Ag, including 0.26 metres of 1.64 opt Ag), the alteration halo was equally as wide as that encountered previously. Detailed examination of the soil geochemistry maps shows that the soil profile is only weakly anomalous here and may, therefore, accurately represent a narrower vein width than anticipated. The attitude of lithological contacts in DDH-8 indicates that the vein is steepening at depth (-80°@ 1,375 metres elevation) relative to the vein attitudes (-70°) at higher (1,450 metres) elevations. The vein has now been intersected between 1,460 metres and 1,375 metres above sea level.

DDH-95-84-9 ($-55^{\circ}/335^{\circ}$, Figure 10i)

DDH-9 was drilled to retest the tremendous Ag-Pb-As-in-soil anomaly only partially tested by DDH-5 which is located 10 metres to the east. The lithologies present in DDH-9 correspond well with those in DDH-5 and the potentially mineralized section was extended from a 5 metre length in DDH-5 to approximately 20 to 25 metres in DDH-9. Similar arsenate staining was encountered in both holes at a similar depth and still does not appear to be very encouraging. DDH-9 was terminated approximately 15 metres past the last altered core, and presumably, fully tested the structure. Significant intersections in DDH-9 included 0.37 opt Ag across 8.1 metres including 0.69 opt Ag across 2.7 metres and 1.1 opt Ag and 1.02% Pb across 0.90 metres.

DDH-95-84-10 ($-56^\circ/335^\circ$, Figure 10j)

DDH-10 was collared approximately 30 metres south of DDH-3 and 4 to test the down dip extension of these two weakly mineralized holes. It intersected 3 metres of almost continuous tourmaline-greisen vein (compared to 90 cm in DDH-4) which is very similar in appearance to that found in silver-rich intersections in DDH-6 and DDH-7. Examination of the drill sections shows that the sediment-intrusive contact, at shallow depths, may not have been a suitable structure for vein formation and that only low grade mineralization will likely be found in the future in this region and in the host metasediments.

6-4: Mineralization in the Drill Holes

Significant mineralization in the drill holes was confined to tourmaline greisen veins or their highly clay-talc altered equivalents. These lithologies have been discussed in Section 6-2. No significant mineralization was encountered in any individual drill intersection within the metasediments. All high geochemical values in samples of metasediments are caused by supergene enrichment in a near/at surface environment in damp weathering conditions. This type of environment seems to favour arsenate and lead-silver-arsenate development which leads to several spectacular geochemical results (for example 87 ppm Ag-, 3200 ppm Pb-in-soil).

Detailed petrographic examination (see Appendix A) shows that the sulphide content of the ore is very low and that the sulphides are generally very tiny and probably <u>largely</u> invisible to the unaided eye. Although no microprobe analysis have proven this thesis, lead, silver, and antimony are probably distributed amongst several secondary lead-silver antimonides and arsenates. The only apparently primary sulphide visible in polished section is arsenopyrite and the association of lead, silver, and antimony with arsenopyrite is unusual. Ionic substitution is not likely, especially in light of spectacular drill intersections such as 37.00 opt Ag across 18 centimetres. Payne (1983, see Appendix A) distinguished several secondary sulphides including jamesonite-boulangerite which undoubtedly is an important carrier of lead, silver, and antimony as well as two other species, Mineral A and B. Only microprobe research will distinguish these as they are too small to sample for diffraction work. Disappointingly low levels of tin enrichment have been encountered in drill assays. Considering the geological environment (tourmaline greisen veins), tin may be more prevalent deeper in this vein system.

CHAPTER 7: Conclusions and Recommendations

Conclusions

Well-developed quartz-tourmaline greisen veins have been found within a 0.7 to 1.0 kilometre long fracture/fault zone which cuts the Cretaceous Lost Horses Stock. Soil sampling has defined highly anomalous Pb-Ag-As-in-soil patterns which largely coincide with this structure. Drill testing of a 200 metre long portion of the structure has shown that the main greisen vein averages 2.0 metres in width within a much broader (approximately 10 metres) zone of intense clay alteration. Examination of assay data and core samples suggests that the vein has been heavily leached within 30 to 40 metres of surface, thus lowering the average silver grade to 3 to 4 opt. Deeper levels of the vein, which presumably have not been leached, contain 20 to 36 opt silver with significant Pb and Sb values. Tin mineralization averages 0.1% throughout the vein but values as high as 0.6% Sn have been received from float samples. If higher tin levels are to be found within this structure they will likely be at depth.

The source of the mineralizing solutions is thought to be the tourmaline-patch, granite phase exposed in the core of the pluton, some 1800 metres to the southwest. This phase appears to be the result of progressive _in situ_ differentiation but detailed whole rock and trace element geochemical analyses are required to prove this.

Recommendations

The following recommendations for further work on the Zeta property are made by the author:

1) An airphoto interpretation of the area should be undertaken in order to delineate major structures and structural patterns.

2) Detailed prospecting should be completed on Pinacle Ridge in the vicinity of the strong soil anomaly (P-35368-71). Several trenches should be excavated along the associated lineament.

3) Trench L20+00E from 20+20N to 20+30N.

4) Deep drill holes should be completed beneath setups 1 (DDH-1, 2,7) and 2 (DDH-3,4,10) and beneath holes 6 and 8. Although hole 8 intersected only weakly mineralized greisen, results from the other holes, combined with our interpretation of the origin of this deposit, suggest that the ore zone rakes to the SW beneath hole 8.

5) If the aforementioned holes return favourable results, deep step-out holes should be drilled 50 and 100 metres west of hole 8.

Respectfully submitted,

Bruce Jago, M.Sc.

STATEMENT OF COSTS

ZETA, 1984

Prior to June 27, 1984.

GEOPHYSICS		
Linecutting - 8.2 kilometres		$ 258.43
Magnetometer Surveys - 6.0 kilometres		123.22
VLF Surveys - 7.0 kilometres		174.70
	GEOPHYSICS TOTAL	$ 556.35
GEOCHEMISTRY		
Soil Sampling - 282 samples		$ 7,953.00
Till Sampling		62.80
Overburden Drilling		4,718.69
	GEOCHEMISTRY TOTAL	$12,734.49
GEOLOGY		
Detailed Geological Mapping		$14,881.45
TRENCHING	TOTAL	$ 5,184.26
	GRAND TOTAL	$33,356.65

STATEMENT OF COST

ZETA, 1984

Post June 27th, 1984.

DIAMOND DRILLING		
Labour		$ 5,085.41
Drilling Costs		76,759.88
Camp Costs		6,413.90
Drilling Support Services		33,406.67
	DIAMOND DRILLING TOTAL	$121,665.85
GRID SURVEYING		
	TOTAL	$ 6,123.68
GEOCHEMISTRY		
Soil Sampling - 44 samples	TOTAL	$ 1,240.89
	GRAND TOTAL	$129,030.43

STATEMENT OF QUALIFICATIONS

1) I, Bruce C. Jago, of 1-501 Wiley St., Thunder Bay, Ontario, Canada, do testify that I supervised the exploration work summarized in this report and performed on the Zeta 1-40 claims, in the Dawson Mining District, Yukon Territory, Canada, in the summer of 1984.

2) Further, I graduated with an H.B.Sc. (First Class Standing) degree in Geology from Lakehead University in 1980 and with an M.Sc. degree in Geology from Lakehead University in 1982.

3) Further, I have worked as an explorationist in Ontario for three field seasons, in Venezula for one year and in Yukon for three field seasons.

4) Further, that I am currently a Lecturer in Geology at Lakehead University.

5) Further, that I was employed with Noranda Exploration Co. Ltd. as a Party Chief while the work contained herein this report was completed.

6) Further, that I am a member in good standing of the Geological Association of Canada, and Mineralogical Association of Canada.

7) Further, that the material contained herein this report is correct to the best of my knowledge.

Bruce C. Jago, M.Sc.
Lecturer in Geology

LIST OF REFERENCES

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APPENDIX A

PETROGRAPHIC DESCRIPTIONS OF SELECTED GREISEN SAMPLES, TRENCH 83-1.

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph.D. Geologist

P.O. BOX 39
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Report for: Andy Lane,
Noranda Exploration Co. Ltd.,
203 - 107 Main Street,
WHITEHORSE, Yukon, Y1A 2A7

Samples: 6 from a Quartz-Tourmaline Greisen

Summary:

The samples are dominated by intergrowths of quartz and tourmaline, and show very variable textures typical of replacement. Some samples contain two ages of tourmaline. Arsenopyrite is common and boulangerite-jamesonite with minor sphalerite occurs in one sample. Ti-oxide-cassiterite is present in all samples. The presence of tin in assays indicates that some of this mineral is cassiterite. However, many grains have a relief which appears more typical of rutile than cassiterite. Secondary arsenides are common as replacements of grains and in late-stage veinlets. Some of these probably are Pb-arsenates (this is compatible with the moderate contents of Pb in many of the samples).

R35226A - early-formed extremely fine grained patches of tourmaline of low pleochroism; later tourmaline is more brightly colored. breccia veinlets common

R35226B - early-formed tourmaline patches with bright colors; later tourmaline is paler and altered in irregular patches; boulangerite-jamesonite with lesser arsenopyrite and sphalerite concentration; abundant alteration to secondary Pb-arsenates, antimonides?.

R35228 - alteration of tourmaline? to patches dominated by sericite with lesser arsenate. Veinlets and breccia veinlets with groundmass of arsenate.

R35229 - abundant fragments of early, very fine grained aggregates of tourmaline (pale colored), a few patches of dark colored tourmaline in a groundmass of quartz and pale bluish green tourmaline; breccia veinlets common

R35236 - dominated by quartz with disseminated arsenopyrite and secondary arsenates, minor pyrite, apatite, and tourmaline

R35237 - dominated by quartz and pale tourmaline, with patches of darker colored tourmaline; arsenates common as pseudomorphs after arsenopyrite.

Several samples contain one or two grains of scheelite, and R35237 contains a few grains of an unknown mineral with higher relief than scheelite (possibly a colorless variety of Ti-oxide).

John G. Payne

John G. Payne,
September 1983

R35226A Quartz-Tourmaline Greisen with Arsenopyrite, Cassiterite, and secondary Arsenate.

The rock contains patches of tourmaline intergrown with quartz in very irregular textures. A few irregular breccia zones cut the rock; they contain abundant fragments of tourmaline in a groundmass of extremely fine grain size.

tourmaline	55-60%
quartz	35-40
arsenopyrite	0.5
arsenate	1- 1½
cassiterite-rutile	0.3
covellite	trace
breccia matrix arsenate?	1½-2

Tourmaline occurs in three distinctive textures. Some early-formed patches consist of extremely fine grained aggregates of equant to prismatic grains averaging 0.02-0.03 mm in size, with coarser prismatic grains towards the borders of the patches. Color is pale to light yellowish green, and pleochroism is slight. Later-formed patches are radiating aggregates of elongate prismatic grains up to 2 mm in length. Color varies widely within and between grains. The darkest pleochroic colors are shades of medium green, brown, and blue. Some blue tourmaline forms late-stage veinlets cutting tourmaline patches of green and brown colors. Patches commonly grade at their ends into acicular tourmaline clusters surrounded by medium grained quartz.

Quartz occurs mainly as fine to medium grained aggregates with a submosaic texture. A few patches consist of irregular aggregates of finer grained quartz, and may represent replaced mafic grains in the host rock. Some grains contain very abundant tourmaline needles whereas others, possibly formed later, contain none.

Arsenopyrite forms a few grains and patches up to 0.7 mm in grain size, and scattered disseminated grains from 0.02-0.2 mm across. Some larger grains are subhedral to euhedral in outline. Many are altered along borders and in patches to secondary arsenates intergrown with minor extremely fine grained covellite. The arsenate has high to very high relief and is extremely fine grained.

Arsenates? also occur as secondary replacements of scattered prismatic (hexagonal?) grains up to 0.5 mm long. The secondary aggregates commonly have a radiating texture of elongate fibrous grains. Elsewhere, aggregates are very fine to extremely fine grained and moderately interlocking. The mineral has high relief (R.I. about 1.7), pale yellow color, low birefringence (0.015-0.025), and hardness of 2-3.

Brown oxide forms clusters of anhedral to euhedral prismatic grains up to 0.1 mm long, and clusters of equant grains averaging 0.02-0.03 mm across. It may be cassiterite or rutile; the R.I. suggests rutile, but some grains have lower birefringence, suggesting cassiterite.

The rock is cut by irregular breccia zones up to 1 mm wide containing abundant fragments up to 0.07 mm across of tourmaline in a groundmass of extremely fine grained, high-relief material, which may be secondary arsenates.

R35226B Quartz-Tourmaline Greisen with Sulfide patch dominated by Boulangerite-Jamesonite with lesser Arsenopyrite; Brecciation, and alteration of sulfides and tourmaline.

The rock contains patches of earlier, darker colored tourmaline surrounded by quartz with patches of paler colored tourmaline. At one end is a patch of boulangerite-jamesonite with disseminated arsenopyrite and lesser sphalerite. Sulfides and tourmaline are moderately altered.

quartz	40-45%	boulangerite-jamesonite	7- 8%
tourmaline		arsenopyrite	1- 1½
early	7-10	isotropic secondary	
late	17-20	minerals	7- 8
Ti-oxide-		Mineral A	0.3
cassiterite	minor	sphalerite	0.1
scheelite	trace	chalcopyrite	trace
		chalcopyrrhotite?	trace
		covellite	trace

Quartz forms irregular aggregates ranging widely in grain size and texture. Finer grained, anhedral aggregates average 0.05-0.2 mm in grain size. Coarser grained patches, including some euhedral grains are from 0.5-1 mm in average size. Some contain abundant tiny acicular crystals of tourmaline.

An early patch of tourmaline consists of fine to medium grains showing strong concentric color zoning and a wide variety of colors in shades of green, brown, and blue. Darkest pleochroic colors are of medium intensity, and the patch shows up dark in the hand sample. It is cut by veinlets and breccia zones. Some consist of pale bluish green tourmaline in optical continuity with the host. A few overgrowths of secondary, nearly colorless tourmaline occur on some grains. Breccia veinlets contain abundant prismatic tourmaline mixed with extremely fine grained secondary minerals.

Later-formed tourmaline consists of patches ranging from dense aggregates of unoriented, very fine to fine grains, to subparallel, slightly radiating clusters of elongate prismatic grains up to 2 mm long. This tourmaline has a pale bluish green color. Some finer grained patches are strongly altered to a dense, somewhat fibrous mass of light brown color.

Ti-oxide (cassiterite) occurs in scattered patches of prismatic grains up to 0.05 mm long.

Scheelite forms one subhedral grain 0.7 mm across. Its borders are slightly embayed, and it is cut by a late breccia veinlet.

The massive, dark grey mineral at one end is boulangerite or jamesonite. (Distinction of these is by a KOH test; unfortunately, we do not have concentrated KOH in the lab). It forms dense aggregates of elongated grains averaging 0.05-0.3 mm in length, and oriented subparallel to the long dimension of the patch. Distinctive properties are: Hardness - very low, moderate reflectivity, moderate to strong anisotropism with no bright colors. The following chemical tests confirm that the mineral is a Pb-Sb sulfosalt: HNO_3 effervescence and dark stain, HCl stain medium brown, KOH, $FeCl_3$.

It contains subhedral to anhedral inclusions of arsenopyrite, mainly from 0.05-0.3 mm in size, with a few grains up to 1.2 mm across.

Both boulangerite-jamesonite and arsenopyrite are strongly altered to light to medium orange-brown, isotropic, secondary minerals of unknown identity. Secondary aggregates probably are extremely fine grained. Locally a mineral with similar relief but moderate birefringence occurs with the orange-brown mineral in some arsenopyrite grains.

(continued)

Several patches up to 0.6 mm across consist of Mineral A, probably pseudomorphic after original subhedral to euhedral arsenopyrite? This mineral has moderate to high relief and moderate to low birefringence. It forms aggregates of equant, unoriented grains averaging 0.02-0.03 mm in size. It is colorless and has low hardness (2).

Sphalerite occurs in a few patches interstitial to jamesonite-boulangerite. Most are from 0.05-0.1 mm in size, with one large patch 0.7 mm across. Within this patch are scattered grains of chalcopyrite averaging 0.05, and an intergrowth of a pale yellow mineral of uncertain composition. This mineral has the color of pyrrhotite but is isotropic. It may be chalcopyrrhotite. The intergrowth with sphalerite is intimate and in part, extremely fine grained. Chalcopyrite also forms scattered grains in boulangerite-jamesonite, averaging 0.02-0.04 mm in size. Covellite occurs locally in the alteration assemblage as extremely fine grained patches.

Mineral A also occurs in a few breccia veinlets associated with quartz, and possibly other, extremely fine grained secondary minerals.

R35228 Altered Quartz-Tourmaline Greisen with patches of Sericite, Secondary Arsenates? after Arsenopyrite

The rock is a medium to coarse grained patchy greisen dominated by quartz and tourmaline. Secondary alteration patches consist of aggregates of sericite with interstitial patches of Mineral A (as in R36237). Mineral A also forms pseudomorphs after arsenopyrite? and late veinlets.

quartz	40-45%
tourmaline	17-20
sericite	25-30
Mineral A	7- 8
Ti-oxide-cassiterite?	0.5
Mineral B	0.2
breccia veins	
Mineral A	1- 1½

Quartz forms anhedral to euhedral aggregates ranging from 0.05-1 mm in grain size. Some patches of very fine to fine grained irregular aggregates contain abundant dusty to extremely fine grained Ti-oxide inclusions; these patches may represent original mafic grains. Coarser grained quartz contains scattered inclusions of sericite, oxides, and tourmaline.

Tourmaline forms subparallel, radiating aggregates of prismatic grains up to 2 mm long. Colors range widely from green to brown, with some blue patches. Some grains show strong concentric zoning. The hand specimen contains "veins" of dark green color. In thin section, one such "vein" is present; it is a zone dominated by tourmaline but it does not have the texture or borders of a vein, and probably is just an unusual concentration of tourmaline.

The rock is altered in patches up to a few mm across to a very fine to fine grained aggregate of sheaves of sericite flakes averaging 0.05-0.15 mm long. Intergrown with sericite are scattered extremely fine grained patches of Mineral A.

Mineral A forms pseudomorphic patches after original subhedral to euhedral arsenopyrite? from 0.2-0.5 mm in average size. It is the same mineral as that described as arsenate in R35226A.

Brown to opaque oxide forms clusters of subhedral to euhedral, equant to prismatic grains from 0.03-0.1 mm in size. These occur within tourmaline aggregates and scattered through quartz. The mineral probably is altered Ti-oxide (rutile), but some may be cassiterite.

Mineral B is a light to medium brown mineral which forms extremely fine grained patches up to 0.3 mm across, generally associated with and slightly intergrown with Mineral A. It is similar to Mineral B of sample R35237, but is anisotropic.

Veinlets and breccia zones are dominated by extremely fine grained Mineral A, with patches of more opaque material resembling Mineral B.

R35229 Fragmental Tourmaline-Quartz Greisen

The rock contains abundant angular to subrounded patches up to several mm across of extremely fine grained tourmaline in a groundmass of coarser grained tourmaline and quartz. A few clusters of darker colored tourmaline are probably late-stage cavity fillings. It is cut by a few breccia veinlets containing extremely fine grained semiopaque of unknown composition.

tourmaline		
patches	20-25%	
dark patches	1½-2	(in section; more in rock)
with quartz	40-45	
quartz	25-30	
semiopaque	2- 3	
breccia veinlets	1	

Tourmaline forms patches up to a few mm across of extremely fine grained aggregates averaging 0.02-0.03 mm in size. Some contain a few coarse prismatic grains up to 1 mm long. One contains radiating aggregates of grains up to 0.7 mm in length. This tourmaline is pale yellowish green to light green in color, and generally shows no color variations.

Several patches up to 2 mm across (in thin section; 7 mm in rock) consist of aggregates of fine to medium grained tourmaline showing variable color zonation. Some consist of bright blue cores with rims of thin concentric zones of green and brown shades. Others contain darker brown cores with similar zoned green and brown rims.

Tourmaline intergrown with quartz is fine to coarse grained, with some anhedral aggregates and some radiating clusters. A few coarse to medium grains occur in the very fine to fine grained aggregates. Color is mainly pale to light bluish green.

Quartz forms anhedral to euhedral grains averaging 0.1-0.5 mm in grain size, with a few grains and patches up to 1.5 mm across. Some grains contain abundant acicular tourmaline grains in random to subparallel orientation. Others are relatively free of tourmaline inclusions.

Semiopaque forms extremely fine grained aggregates in patches, generally interstitial to very fine to fine grained tourmaline. A few patches are up to 0.7 mm across. The mineral appears to have been plucked from the section in parts of the section.

Pyrite forms one grain 0.8 mm across. It is strongly altered to semiopaque as described above, with much of this removed from the section.

The rock contains a major breccia veinlet at one side and a few minor ones elsewhere. These contain fragments of tourmaline in a groundmass of extremely fine grained semiopaque as described above. Some veinlike zones contain prismatic tourmaline grains in a groundmass of semiopaque; these veins are up to 0.2 mm wide, and probably are associated in origin with the breccia zones.

The rock is cut by another vein up to 0.3 mm wide which contains dark brown semiopaque and patches of secondary arsenate? as in R35237 (Mineral A). Intergrown with these are patches of tourmaline and quartz as in the rock.

APPENDIX B

PETROGRAPHIC DESCRIPTIONS OF SELECTED SAMPLES, "GASH ZONE"

R35236 Quartz Greisen with Arsenopyrite, Ti-oxide/Cassiterite, and minor Scheelite and Tourmaline

The rock is a fine to medium grained greisen dominated by quartz with inclusions of other minerals.

quartz	93-95%
arsenopyrite	2- 3
Mineral A,B	2- 3
pyrite	0.3
apatite	0.5
tourmaline	0.5
scheelite	trace
Ti-oxide-cassiterite	1- 1½

Quartz forms a few relic patches averaging 0.05-0.1 mm in grain size; these generally contain moderately abundant irregular Ti-oxide grains averaging 0.02-0.07 mm in size. They may be replacements of original mafic grains. These grade into and are recrystallized to coarser grained patches of quartz with much fewer inclusions, and common euhedral terminations into vugs.

Arsenopyrite forms clusters of subhedral to euhedral grains with common diamond-shaped cross-sections. Grains are up to 1 mm long. Alteration is slight along grain borders to Minerals A and B.

Minerals A and B are secondary alteration minerals, formed by replacement of arsenopyrite. Mineral A is colorless with low birefringence and high relief. Mineral B is light to medium brown in color, and ranges from dense, isotropic aggregates to very fine grained aggregates with low? interference colors. Both probably are arsenates.

Pyrite occurs in the hand sample as a cluster of subhedral grains 1-2 mm across. It was not recognized in thin section, but may be present as some of the smaller opaque grains.

Apatite forms scattered stubby euhedral prismatic grains up to 0.3 mm long.

Tourmaline occurs as scattered anhedral grains averaging 0.05-0.1 mm across, and a few elongate prismatic grains up to 1 mm long. Pleochroism is from pale to light green. Tourmaline commonly is associated with arsenopyrite.

Scheelite forms a few anhedral grains up to 0.25 mm across. A few other grains of similar relief and texture have moderately high interference color (2nd order to third order). They probably are scheelite as well, although the interference color seems a little high.

Brown to opaque oxide forms irregular clusters of anhedral to euhedral equant to prismatic grains averaging 0.02-0.1 mm in size. It also forms individual grains up to 0.2 mm across. Much of this is probably Ti-oxide, but some of the finer grained aggregates may be cassiterite.

R35237 Quartz-Tourmaline Greisen with secondary Pb-arsenate, Cassiterite, Scheelite and unknown

The sample is a variably textured greisen with finer grained patches of quartz, clusters of tourmaline, and coarser, commonly vuggy quartz patches. Secondary Pb-arsenate? is abundant as pseudomorphs after original sulfosalts. Minor cassiterite? and a trace of scheelite and an unknown high-relief mineral are scattered through the rock.

quartz	50-55%
tourmaline	30-35
Mineral A	12-15
Mineral B	½- 1
cassiterite-rutile	1½-2
scheelite	trace
apatite	0.3
Mineral W	trace

Quartz shows three main textures. Patches up to about 1.5 mm long consist of irregular intergrowths averaging 0.05-0.1 mm in size. They have abundant inclusions of Ti-oxide and lesser of apatite. The outlines of some patches suggest replacement of an original mafic prismatic crystal. Elsewhere, quartz forms an aggregate of very irregular grains in part intergrown with tourmaline. These commonly have scattered inclusions of Ti-oxide and tourmaline. At one end is a late-formed zone of coarse grained, inclusion-free quartz, which shows euhedral terminations into a cavity (see hand sample).

Tourmaline occurs in clusters of prismatic to anhedral grains showing a wide variety of colors and textures. Some radiating aggregates are up to 2 mm in length. A few patches consist of dark colored tourmaline, with brown varieties predominant. Some grains are blue and others green in these patches, and strong concentric zoning is prominent. Much of the tourmaline is pleochroic from colorless to light green or brown.

Minerals A and B are secondary Pb-arsenates? Mineral A forms pseudomorphs after original subhedral to euhedral prismatic hexagonal? grains up to 1 mm in size. It occurs as extremely fine grained aggregates of equant grains, generally showing no overall structure. Locally it forms spherical aggregates averaging 0.02-0.05 mm in size, with a radiating texture of fibrous to flaky grains. Some patches are almost opaque, because of extremely fine grain size and probably because of the presence of a dusty opaque or semiopaque phase.

Mineral B occurs in a few patches up to 0.5 mm across associated with darker varieties of Mineral A. Mineral B is light brown in color and isotropic; it forms aggregates of equant grains averaging 0.002-0.003 mm in size.

Brown oxide forms irregular clusters of prismatic to acicular grains up to 0.2 mm across. The mineral has very high relief, suggesting rutile, but grains commonly show only moderate birefringence suggesting cassiterite.

Scheelite forms scattered anhedral grains averaging 0.3-0.5 mm in size. It commonly is irregularly intergrown with quartz.

Apatite forms subhedral stubby to elongate prismatic grains averaging 0.1 mm in length. It is somewhat concentrated in patches with fine grained quartz containing abundant dusty inclusions, suggesting that it may be relic apatite grains associated with original mafic minerals.

(continued)

R35237 (page 2)

Mineral W forms a few subhedral to euhedral prismatic grains up to 0.3 mm in size, and a few anhedral grains up to 0.15 mm across. It has very high relief (about 2.2-2.5 R.I.) and moderate birefringence (0.030-0.040). Extinction is parallel.

One tourmaline grain appears to have been broken along one side. On this side is an overgrowth of secondary tourmaline in parallel prismatic grains up to 0.1 mm long. This tourmaline is colorless.

APPENDIX C

STREAM GEOCHEMICAL RESULTS

SAMPLE No.	Cu	Pb	Zn	Ag	As	Sn	Sb
35373	26	14	100	0.2	L2		
37402						2	6
37403						6	10
37404						4	16
37405						6	1
37406						18	14
37407						16	6
37478						22	12
37479						4	16
44261	52	44	130	0.6	280		
44263	90	60	150	1.0	1,000		
44265	56	20	80	2.4	480		
44284	34	28	140	0.4	360		
44334	28	26	100	0.4	140		
44338	44	30	200	1.4	170		
44401	22	20	100	0.2	8		
44403	18	16	100	0.2	4		

NOTE: ALL VALUES IN PPM, MISSING VALUES NOT AVAILABLE AT THIS TIME.

APPENDIX D

SOIL GEOCHEMICAL RESULTS

NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED June / 25 / 84 CODE 8407-002 SHEET 1

MATERIAL Silt-Soil DATE ANALYSED June / 28 / 84 ANALYST R.F.

REMARKS Cu, Zn, Pb, Ag, As in ppm.

0.2g / 2ml HClO4 : HNO3 → 5ml

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As									
110	16E - 21.75N		20	68	12	0.2	22									
1	16E - 22 N		66	170	18	0.4	42									
2	22E - 19 N		14	50	18	0.6	10									
3	19.25		12	82	22	0.2	6									
4	19.5		12	62	16	0.4	6									
5	19.75		12	80	20	0.4	6									
6	20		16	56	10	0.2	16									
7	20.25		18	70	62	0.8	130									
8	20.5		16	72	92	2.8	360									
9	20.75		28	94	140	1.6	32									
120	21		24	130	12	0.6	18									
1	21.25		38	350	110	1.4	140									
2	21.5		22	88	36	1.0	54									
3	21.75		58	450	52	1.8	86									
4	22 E - 22 N		80	620	160	2.6	180									
5	20.5E - 18.75N		14	26	6	0.2	< 2									
6	19		14	92	18	0.4	< 2									
7	19.25		12	58	14	0.2	< 2									
8	19.5		6	24	16	0.6	< 2									
9	19.75		14	84	18	0.2	< 2									
130	20		12	88	28	0.2	< 2									
131	20.5E - 20.25N		16	52	6	0.2	10									

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NORANDA GEOCHEM LABORATORY

LOCATION: ZETA PROJECT: 95 COLLECTOR: BJ DATE RECEIVED: June / 25 / 84 CODE: 8407-002 SHEET: 2

MATERIAL: SILT - SOIL DATE ANALYSED: June / 28 / 84 ANALYST: R-F

REMARKS: Cu, Zn, Pb, Ag, As in ppm.

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As
132	20.5E - 20.5N		42	280	22	0.6	78
3	20.75		36	880	2200	13.	1100
4	21		38	190	940	3.8	440
5	21.25		42	220	180	0.8	240
6	21.5		56	260	46	0.8	96
7	20.5E - 21.75N		46	280	24	1.4	58
8	19E - 18N		10	42	6	0.2	2
9	18.25		16	84	16	0.4	4
140	18.5		16	80	14	0.2	6
1	18.75		12	84	16	0.2	2
2	19		14	88	28	0.4	8
3	19.25		14	64	18	0.2	< 2
4	19.5		14	66	14	0.4	< 2
5	19.75		10	38	28	0.6	8
6	20		30	160	56	1.8	140
7	20.25		22	54	16	0.6	12
8	20.5		44	82	24	1.4	100
9	19E - 20.75N		62	90	18	0.8	120
150	CHECK NL-5		24	60	66	1.4	54

NORANDA GEOCHEM LABORATORY

LOCATION: ZETA PROJECT: 95 COLLECTOR: BJ DATE RECEIVED: June / 25 / 84 CODE: 8407-002 SHEET: 3

MATERIAL: Soil DATE ANALYSED: June / 29 / 84 ANALYST: R.F.

REMARKS: Cu, Zn, Pb, Ag, As in ppm.
0.2 g / 2 mL HClO4 : HNO3 → 5 mL

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As
1	CHECK NL-5		26	66	66	1.6	54
2	19E - 21 N		54	98	14	0.4	96
3	21.25		52	170	24	1.0	80
4	21.5		110	240	30	2.4	110
5	21.75		140	1200	32	2.8	130
6	19E - 22 N		50	350	12	0.8	46
7	20E - 18 N		18	78	12	0.2	2
8	18.25		18	78	8	0.2	6
9	18.5		18	76	14	0.2	< 2
10	18.75		14	38	10	0.2	< 2
1	19		16	74	14	0.2	6
2	19.25		16	82	18	0.2	4
3	19.5		12	68	12	0.2	< 2
4	19.75		14	80	16	0.2	4
5	20E - 20 N		12	74	20	0.2	6
6	19.5 E - 18 N		10	28	4	0.2	< 2
7	18.25		14	90	20	0.2	4
8	18.5		14	64	12	0.2	2
9	18.75		20	74	20	0.6	12
20	19		12	64	18	0.2	8
1	19.25		12	56	10	0.2	< 2
22	19.5E - 19.5 N		16	68	14	0.2	2

NORANDA GEOCHEM LABORATORY

LOCATION: ZETA — PROJECT: 95 — COLLECTOR: BJ — DATE RECEIVED: June /25 /84 — CODE: 8407 · 002 — SHEET: 4

MATERIAL: Soil — DATE ANALYSED: June /29 /84 — ANALYST: R.F.

REMARKS: Cu, Zn, Pb, Ag, As in ppm.

0.2 g/2 mL HClO4 · HNO3 → 5 mL

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As								
23	19.5E - 19.75N		16	82	16	0.2	12								
4	20		16	84	32	0.4	16								
5	20.25		86	390	1300	7.4	960								
6	20.5		52	350	440	4.2	540								
7	20.75		66	220	140	2.4	300								
8	19.5E - 21 N		38	94	92	1.0	130								
9	15 E - 18 N		12	58	12	0.2	12								
30	18.25		12	70	20	0.2	24								
1	18.5		20	94	110	0.6	210								
2	18.75		18	110	110	0.8	230								
3	19		14	74	18	0.2	76								
4	19.25		12	96	42	0.6	58								
5	19.5		14	94	40	0.8	54								
6	19.75		28	130	24	0.2	52								
7	20		14	76	20	0.2	22								
8	20.25		20	70	20	0.2	40								
9	20.5		32	60	12	0.4	38								
40	20.75		24	150	30	0.4	66								
1	[illegible]		110	430	40	1.0	240								
2	21.25		40	190	38	0.6	18								
3	21.5		20	52	6	1.4	6								
44	15E - 21.75N		32	200	12	0.2	14								

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NORANDA GEOCHEM LABORATORY

LOCATION: ZETA PROJECT: 95 COLLECTOR: BJ DATE RECEIVED: June / 25 / 84 CODE: ?437-002 SHEET: 5

MATERIAL: Soil DATE ANALYSED: June / 29 / 84 ANALYST: R.F.

REMARKS: Cu, Zn, Pb, Ag, As in ppm.
0.2 g/2 mL HClO4 : HNO3 → 5 mL

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As
45	15E - 22N		30	140	14	0.8	44
6	21E - 18N		12	74	12	0.2	< 2
7	18.25		24	78	14	0.2	12
8	18.5		16	50	16	0.2	< 2
9	18.75		16	86	30	0.2	< 2
50	19		12	48	8	0.2	< 2
1	19.25		16	40	10	0.2	< 2
2	19.5		16	58	30	0.2	2
3	19.75		18	120	28	0.4	< 2
4	20		14	130	32	0.4	< 2
5	20.25		30	120	160	1.8	130
6	20.5		54	210	740	10.	640
7	[illegible]		72	400	2600	7.8	1100
8	21		34	180	24	0.2	210
9	21.25		96	660	170	2.0	140
60	21.5		120	480	48	3.0	130
1	21.75		20	38	10	0.6	6
2	21E - 22N		22	52	10	0.2	14
3	16E - 18N		14	74	12	0.2	10
4	18.25		14	62	12	0.2	4
5	18.5		18	130	130	0.6	150
66	16E - 18.75N		12	58	10	0.2	20

NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED June / 25 / 84 CODE 840?.002 SHEET 6

MATERIAL Soil DATE ANALYSED June / 29 / 84 ANALYST R.F.

REMARKS Cu, Zn, Pb, Ag, As in ppm.
0.2g / 2ml HClO4 · HNO3 → 5ml

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As
67	16E - 19 N		14	86	22	0.2	64
8	19.25		14	120	80	1.6	86
9	19.5		12	58	12	0.2	54
70	19.75		14	78	14	0.2	28
1	20		20	130	24	0.2	48
2	20.25		22	86	18	0.2	40
3	20.5		44	88	14	0.2	94
4	20.75		28	150	80	0.6	10
5	21		54	220	20	0.2	68
6	21.25		76	580	140	1.0	58
7	16E - 21.5 N		34	140	18	0.4	44
8	20E - 20.25 N		20	44	42	0.6	50
9	20.5		190	410	3800	87.	3200
80	20.75		84	350	2600	6.4	1100
1	21		70	360	940	9.6	400
2	21.25		40	140	560	2.2	280
3	21.5		60	420	170	2.0	250
4	21.75		44	290	500	2.0	340
5	20E - 22 N		100	1400	58	2.4	190
6	23E - 18 N		12	84	14	0.2	< 2
7	18.25		16	78	36	0.4	14
88	23E - 18.5 N		16	76	22	0.2	4

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NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED June / 25 / 84 CODE 847-002 SHEET 7

MATERIAL Soil DATE ANALYSED June / 29 / 84 ANALYST R.F.

REMARKS Cu, Zn, Pb, Ag, As in ppm.

0.2 g / 2 ml HClO4 : HNO3 → 5 ml

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As								
89	23E - 18.75 N		14	86	22	0.2	< 2								
90	[illegible]		14	82	24	0.2	< 2								
1	19.5		18	130	34	0.8	16								
2	19.75		16	120	30	0.4	12								
3	20		14	64	12	0.2	10								
4	20.25		30	110	92	2.2	300								
5	20.5		20	94	46	0.8	190								
6	20.75		16	76	8	0.4	20								
7	21		16	58	10	0.8	34								
8	21.25		22	120	140	2.0	170								
9	23E - 21.5 N		50	400	58	1.6	200								
100	CHECK NL-5		26	66	24	1.6	58								
1	23E - 21.75 N		12	72	12	0.4	12								
2	23E - 22 N		14	58	8	0.2	6								
3	21.5E - 19.25 N		24	88	38	0.8	20								
4	19.5		16	120	32	0.4	8								
5	19.75		14	56	14	0.2	2								
6	20		20	96	22	0.2	20								
7	20.25		12	54	20	0.6	38								
8	20.5		26	140	110	5.8	1600								
9	20.75		22	150	92	0.8	52								
110	21.5E - 21 N		24	140	24	0.4	30								

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NORANDA GEOCHEM LABORATORY

LOCATION: ZETA PROJECT: 95 COLLECTOR: BJ DATE RECEIVED: June / 25 / 84 CODE: 8407-002 SHEET: 8

MATERIAL: Soil DATE ANALYSED: June / 29 / 84 ANALYST: R.T.

REMARKS: Cu, Zn, Pb, Ag, As in ppm

[illegible]

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As
111	21.5 E - 21.25 N		28	120	130	1.0	88
2	21.5		24	140	86	0.4	110
3	21.75		30	74	22	0.4	22
4	21.5 E - 22 N		40	72	20	0.6	24
5	17 E - 18 N		14	66	6	0.2	4
6	18.25		14	66	10	0.2	2
7	18.5		14	66	14	0.2	6
8	18.75		20	180	92	0.4	140
9	19		24	220	140	2.0	220
120	19.25		12	88	140	1.8	110
1	19.5		12	68	20	0.2	12
2	19.75		18	80	18	0.2	22
3	20		14	74	18	0.2	34
4	20.25		30	150	14	0.6	20
5	20.5		38	120	16	0.6	28
6	20.75		72	160	48	1.0	280
7	21		74	340	160	0.8	180
8	21.25		76	320	20	1.4	68
9	21.5		46	300	12	1.0	32
130	21.75		48	210	6	0.6	20
1	17E - 22 N		48	80	2	0.4	14
132	19.5E - 21.25 N		52	190	58	0.8	100

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NORANDA GEOCHEM LABORATORY

LOCATION: ZETA — PROJECT: 95 — COLLECTOR: BJ — DATE RECEIVED: June / 25 / 84 — CODE: 8407·002 — SHEET: 9

MATERIAL: Soil — DATE ANALYSED: June / 29 / 84 — ANALYST: R.F.

REMARKS: Cu, Zn, Pb, Ag, As in ppm.
0.2 g/2 mL HClO4 : HNO3 → 5 mL

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As
133	19.5 E - 21.5 N		76	620	110	3.4	260
4	21.75		56	540	86	1.8	130
5	19.5 E - 22 N		28	150	16	0.6	18
6	24 E - 18 N		16	62	14	0.2	2
7	18.25		14	80	22	0.2	6
8	18.5		14	90	22	0.2	2
9	18.75		14	72	16	0.2	8
140	19		16	64	18	0.2	24
1	19.25		16	94	22	0.2	8
2	19.5		14	80	20	0.2	6
3	19.75		38	120	26	0.4	110
4	20		18	52	8	0.2	18
5	20.25		16	56	8	0.2	12
6	20.5		42	140	12	0.4	170
7	20.75		36	160	22	1.4	640
8	21		24	130	12	0.4	94
9	24 E - 21.25 N		20	74	10	0.2	32
150	CHECK NL-5		26	66	68	1.8	58
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NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED June / 25 / 84 CODE 8407-002 SHEET 10

MATERIAL SOIL DATE ANALYSED June / 29 / 84 ANALYST RF

REMARKS Cu, Zn, Pb, Ag, As in ppm;

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As								
1	CHECK NL-5		26	68	74	1.2	56								
2	24E - 21.5N		36	260	44	0.4	300								
3	-21.75		32	210	180	1.6	30								
4	24E - 22N		16	90	38	0.8	14								
5	18E - 18N		14	72	14	0.2	16								
6	-18.25		16	72	12	0.2	4								
7	-18.5		20	74	12	0.2	4								
8	-18.75		16	66	16	0.2	10								
9	-19		22	86	22	1.2	46								
10	-19.25		18	92	26	0.2	10								
1	-19.5		18	86	22	0.2	14								
2	-20		16	54	14	0.4	12								
3	-19.75		30	72	16	2.2	22								
4	-20.25		14	48	12	0.2	10								
5	-20.5		92	160	22	0.2	120								
6	-20.75		40	110	20	0.2	30								
7	-21		62	160	32	0.8	150								
8	-21.25		56	340	20	2.4	48								
9	-21.5		180	4000	8	3.4	96								
20	-21.75		34	120	24	1.6	14								
1	18E - 22N		24	88	16	0.2	20								
22	25E - 19N		14	110	22	0.2	16								

NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED June/25/84 CODE 8407-002 SHEET 11

MATERIAL SOIL DATE ANALYSED JUNE/29/84 ANALYST RF

REMARKS Cu, Zn, Pb, Ag, As in ppm;

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As								
23	25E - 19.25N		14	110	22	0.2	32								
4	-19.5		12	50	10	0.4	8								
5	-19.75		16	74	16	0.2	14								
6	-20		84	3500	16	0.2	48								
7	-20.25		16	78	10	0.2	16								
8	-20.5		18	44	8	0.4	22								
9	-20.75		34	60	8	0.2	24								
30	-21		38	600	30	1.2	360								
1	-21.25		36	320	30	0.4	230								
2	-21.75		34	700	250	2.0	72								
3	25E - 22N		26	100	32	1.4	44								
4	18.5E - 18N		14	100	10	0.6	4								
5	-18.25		16	70	14	0.2	10								
6	-18.5		16	90	18	0.2	4								
7	-18.75		16	84	18	0.2	8								
8	-19		16	80	18	0.2	8								
9	-19.25		14	76	18	0.2	8								
40	-19.5		24	80	550	8.4	300								
1	-19.75		26	92	54	0.2	56								
2	-20		20	64	32	0.4	12								
3	-20.25		22	66	18	0.2	22								
44	18.5E - 20.5N		58	160	28	0.2	40								

NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED JUNE/25/84 CODE 8407-002 SHEET 12

MATERIAL SOIL DATE ANALYSED JUNE/29/84 ANALYST RF

REMARKS Cu, Zn, Pb, Ag, As in ppm,

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As							MTS	GCS
45	18.5E - 20.75N		16	60	14	0.2	12								
6	- 21		66	110	28	1.2	82								
7	- 21.25		72	500	46	1.8	140								
8	- 21.5		150	3400	44	2.0	140								
9	- 21.75		230	700	14	1.4	120								
50	18.5E - 22N		110	500	30	0.6	40								
1	37402		16	52	6	0.4	18							NOT GIVEN	NOT GIVEN
2	03		20	130	40	2.0	230							↓	↓
3	04		16	140	30	0.2	62							↓	↓
4	05		22	58	18	0.2	78							↓	↓
5	06		18	130	24	0.2	130							↓	↓
6	07		14	140	28	0.2	100							↓	↓
7	37408		26	140	44	0.6	170							↓	↓
8	37478		28	110	30	0.2	180							↓	↓
59	37479		30	120	34	0.2	200							↓	↓
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NORANDA EXPLORATION COMPANY LTD. — Property META — Hole no. Z-84-2 — Sheet 2 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
		95		38.3-40.4 m: 3 Tour, Tour-Qtz vein with extensive hem'n and med. lim'n.										
				39.0-39.15m: Strong kaol.-lim., H-wall marked by 2 cm of Clay/Talc; F-wall by brx'd Tour. vein.										
				39.4-39.6 m: Kaol'd-Hem'd zone with remnant syenite.										
		95		40.4-41.0 m: White-yellow clay/talc in sharp contact with brx'd, kaol'd Tour. vein.										
		95		41.0-41.8 m: Brx'd, Hem'd, mildly Kaol'd Tour. Vein. Some zones of predominant lim'n. Hem lim. at the F-wall.										
41.8	47.2			ALTERED SYENITE Generally the syenite is highly kaolinized and commonly limonite stained with local clay or clay/talc alteration.										
		90		41.8-43.1 m: Brown, completely kaol'd and lim'd syenite. Very strong lim'n @ F-wall.										
		90		43.1-44.5 m: Yellow-white intrusion alt'd to clay, clay-talc or kaolinite. Clay alt'n increases strongly from 43.1-43.4 m.										
		100		44.5-44.9 m: Complete Kaol'n and strong lim'n.										
		85		44.9-45.8 m: Highly broken, completely kaol'd syenite, yellow-green colour changing to brown @ 45.8 m.										
		95		45.8-47.2 m: Complete kaol'n. Lim'n increases from 46.7-47.2, banding of lim. @ 15° to C.A. after 46.5. Lower contact with rel. fresh syenite is friable for 20 cm.										
47.2	58.5	100		RELATIVELY FRESH SYENITE Local extensive limonite stains but generally unaltered. Limonite banding at [illegible] to C.A. Lim'n from 4[illegible]-48.5, 52.8-5[illegible], 55.1-55.7, 56.5-57.4, 57.9-58.1 m. This area is well fractured but not friable.										
58.5	65.8	100		FRESH SYENITE Syenite is well fractured but competent. Limonite and manganese oxide along fracture planes.										
	65.8			END OF HOLE.										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 11, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS	NTS no. 115 P/14
Hole no. Z-84-3	Finished July 11, 1984	Lat. 19+32E	Lat.	Depth / Bearing / Dip / Depth / Bearing / Dip	Project no. 95
Bearing 335°	Length 62.8 m (206 ft.)	Dep. 19+76N	Dep.		Logged by B. Jago
Dip - Collar -45°	Core size NQ	Elev.	Elev.		Sheet 1 of

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	Length	ASSAYS
0	6.5			OVERBURDEN						
6.5	18.0			WEAKLY TO STRONGLY KAOLINIZED SYENITE						
				Hbl-Bio Syenite/Monzonite with generally fresh mafics. Kaolinization varies from weak to intense.						
		100		8.2 m: Kaol.-Lim. along fractures at 45° to C.A.						
		95		8.8-11.3 m: Strongly Kaol'd, mod. to strongly lim'd syenite. 15 cm Qtz-Tour vein @ 10.06 m with intense kaol'n and lim'n of F-wall.						
				11.3 m: Zone of intense fol'n, lim'n and kaol'n.						
				11.3-18.0 m: Weakly fol'd and kaol'd syenite. Lim. along fol'n planes. Hbl → Chl + Bio.						
18.0	21.49			STRONGLY KAOLINIZED SYENITE						
		95		18.0-19.4 m: Mod. to intense kaol'n; mafics destroyed, moderate foliation. Some drusy quartz; minor tour. veins @ 45° to C.A. Limonite ends sharply at 19.2 m.						
		100		19.4-20.1 m: Complete kaol'n and destruction of mafics. Weak to mod, irregular lim'n.						
		100		20.1-20.4 m: Intense to complete kaol'n of syenite and mod. to strong destruction of Hbl + Bio. Limonite weak except in foliated zones.						
				20.4-21.49 m: Same as above but strongly foliated.						
21.49	24.08	75		POSSIBLE GREISEN VEIN						
				Poor core recovery but zone appears to be a 2-Tourmaline, Tour-Qtz vein especially from 21.5-21.6 m. F-wall of this section passes into a zone of intense clay alt'n to 23.3 m. Possible Tour. to 23.5 in a soft, friable zone which grades into clay/ kaol. with limonite stains.						
24.08	25.15			STRONGLY KAOLINIZED SYENITE						
				Intense clay alteration and kaolinization; strong lim'n fro 8 cm @ 25.0 m.						
25.15	31.6			HORNFELSED QUARTZITE						
				Generally broken, hornfelsed quartzite with abundant Lim. and weak arsenate staining.						

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-3 Sheet 2 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
		50		25.15-26.8 m: Moderately bleached quartzite hornfels. Very broken core with limonite and arsenate (?) stains on fractures.										
				26.8-31.6 m: Brecciated quartzite hornfels with abundant limonite and minor arsenate.										
31.6	33.7			KAOLINIZED SYENITE Intensely kaolinized syenite with virtually no mafics remaining. Strong lim'n especially at 31.6-32.2 and 32.9-33.7 m.										
33.7	34.1			HORNFELSED QUARTZITE Limonite staining, possibly 1% v.f.g. Py or Asp.										
34.1	34.7			KAOLINIZED SYENITE Extremely kaolinized, abundant clay alteration and limonite.										
34.7	34.9			CLAY Banded @ 45° to C.A.										
34.9	35.0			KAOLINIZED SYENITE Completely kaolinized, intense lim'n.										
35.0	35.4			HORNFELSED QUARTZITE Minor fractures coated with hematite										
35.4	36.4			KAOLINIZED SYENITE Very strong lim'n. Intensely fractured at 36.3 m and cemented with limonite. Sharp F-wall contact with quartzite.										
36.4	62.8			HORNFELSED QUARTZITE Competent, quartzite from H-wall to 38.1. Below this the rock is strongly jointed and fractured with limonite coating these planes. 50.30-50.49 m: Tourmaline vein breccia, highly altered, broken. Green-grey clay in centre. 51.2-54.8 m: Coarse clastic unit. 60.30-60.52 m: Similar to previous greisen but less tourmaline as breccia cement.	1-2% v.f.g. sulphide									
	62.8			END OF HOLE.										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 12, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS						NTS no. 115 P/14
Hole no. Z-84-4	Finished July 13, 1984	Lat. 19+32E	Lat.	Depth	Bearing	Dip	Depth	Bearing	Dip	Project no. 95
Bearing 335°	Length 60.97 m (200 ft.)	Dep. 19+75N	Dep.							Logged by B. Jago
Dip - Collar -70°	Core size NQ	Elev.	Elev.							Sheet 1 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
0	3.7			OVERBURDEN										
3.7				KAOLINIZED SYENITE Hbl-Bio Syenite variably altered to Kaolinite ± limonite ± clay 3.7-5.0 m: Strongly kaolinized and limonitized, foliated at 65° to C.A. 5.0-5.5 m: Kaol'd syen. cut by minor quartz veins and weakly tourmalinized. Very weathered, friable. 5.5-6.4 m: Strong limonite and clay alteration. 6.4-9.0 m: Complete kaolinization, mod. to strong lim'n; Fe-Mn along fractures, mafics altered. 9.0-10.4 m: Mild to mod. kaol'n and weak lim'n. Fe-Mn along fractures. Fol'n @ 60° to C.A. 10.4-14.0 m: Weak alt'n of Hbl. to chl. + Bio; possible tourmaline on fractures at 55-60° to C.A. 14.0-14.3 m: Highly decomposed, possible tour. on fractures. 14.3-15.5 m: Weak kaol'n, minor lim. from 14.9-15.2. Minor Tour. on fractures. 15.5-16.6 m: Strongly kaol'd and weakly to mod. lim'd. Tour. veins along fractures at 45-50° to C.A. Some lim. and Fe-Mn. 16.6-16.8 m: Hornfelsed Quartzite xenolith. 1-2% Py + Aspy, some Fe-As stains. 16.8-18.4 m: Intense to complete Kaolinization. Mafics destroyed, mod. to strong lim'n, fol'n at 50° to C.A., rare Tour. on fractures.										
18.4	22.6			FRESH SYENITE Relatively unaltered syenite with minor alteration of mafics to chl + bio.										
22.6	28.0			KAOLINIZED SYENITE Strong to complete kaolinization with moderate to complete destruction of mafics. Limonite throughout with local concentrations especially from 27.13-27.59, 27.74-28.05, 24.09-25.0. Fe-Mn along slickensides at 60° to C.A. at 24.7 m. Very friable at 28.0 m.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-4 Sheet 2 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
28.0	29.0			FRESH SYENITE Relatively fresh, very weak kaol'n and lim'n										
29.0	29.4			LIMONITIZED, KAOLINIZED SYENITE Med. to strong kaol'n, strong kaol'n.										
29.4	30.0			FRESH SYENITE										
30.0	33.5			KAOLINIZED SYENITE Gradation from previous fresh syenite into strongly to completely kaolinized syenite with strong to complete destruction of mafic minerals. Crude porous alteration banding at 50° to C.A. Extensive clay alteration at 31.86-32.0 m. 1.5 cm Tour. vein in top of section. Mild mafic destruction and lim'n from 33.38-34.15.										
33.5	35.4			LIMONITIZED-KAOLINIZED SYENITE Intensely to completely kaolinized and very highly limonitized. Slickensides at 60° to C.A. at 33.8 m.										
35.4	37.8			CLAY ALTERATION ZONE Light yellow to white to grey coloured clay zone. Complete destruction of original minerals and textures. Tour spots throughout. 36.59-36.79 m: Tourmaline veinlettes and disseminations. 37.5-37.8 m: Strongly limonitized, sharp contact at 60-65° to C.A. at F-wall.										
37.8				LIMONITIZED-KAOLINIZED SYENITE Strongly foliated at 45° to C.A., variably altered to kaolin and limonite. 38.7-39.9 m: Mod.-strong kaol'n, mild to mod. destruction of mafics, pervasive lim'n. 39.9-41.8 m: Mod.-complete kaol'n and lim'n, variable destruction of mafics. Crude alt'n banding at 30° to C.A. White clay at 41.62-41.77 m. 41.8-43.9 m: Complete kaol'n, strong to complete destruction of mafics, pervasive lim'n esp. on fractures from 42.6-43.0 m. 43.9-48.8 m: Mod. to strong kaol'n, local fol'n and lim'n. Fe-Mn + Lim. along fractures at 35° and 60° to C.A. 47.56-48.6 m: Remnant or secondary biotite to 1cm. 48.8-50.0 m: C.g. biotite in c.g. kaol'd-lim'd syenite. 50.0-50.6 m: Hbl-Bio syenite relatively fresh. 50.6-54.9 m: Bio. syenite alt'd as in 48.8-50.0 m. 54.9-60.97 m: Much finer grained Hbl syenite, mild to mod. kaol'n										
	60.97			END OF HOLE										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 15, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS (Depth / Bearing / Dip / Depth / Bearing / Dip)	NTS no. 115 P/14
Hole no. Z-84-5	Finished July 17, 1984	Lat. 20+79E	Lat.		Project no. 95/82
Bearing 335°	Length 80.49 m (264 ft.)	Dep. 19+96N	Dep.		Logged by B. Jago
Dip - Collar -45°	Core size NQ	Elev.	Elev.		Sheet 1 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS		% Mineralization	Sample no.	METRES From	METRES To	Length	ASSAYS
0	4.8			OVERBURDEN							
4.8	10.4			SYENITE							
					K-feldspar phyric, Hbl-Bio Syenite/Monzo-nite.						
		100		6.1-8.5 m:	Very c.g. groundmass, Hbl < 2 x Bio.						
		100		8.5-10.4 m:	Feldspars altered to green material, high bio. content, moderately fresh. Med. grained at contact, no flow banding.						
10.4	11.3	90		HORNFELSED QUARTZITE							
					Generally fine to med. grained hfls. quartzite. Moderately bleached, 3% Bio, < 1% Py + Asp, local minor rust stains, minor Fe/Mn along the well developed fractures.	< 1% Py + Asp					
11.3	28.6			HORNFELSED COARSE CLASTIC QUARTZITE							
					Unit is variably and widely altered.						
		80-85		11.5 m:	Tour. veinlette 1.5 mm wide, minor Asp.						
		80-85		12.4-12.5 m:	Highly fractured, very soft, green colour; possibly an altered Tour. vein at 30° to C.A.						
		80-85		12.5-17.4 m:	Hornfelsed, siliceous coarse clastic with + trace sulphides. Possible weak, pervasive tourmalinization as thin (<1 mm) veinlettes with associated clay.						
		30-35		17.4-28.6 m:	Well fractured, mod. bleached coarse clastic. Mod. hematization throughout, locally highly altered to clay and consequently soft. Possible Tour. throughout, very minor Qtz veins <1 cm.						
28.6	38.7			VARIABLY ALTERED SYENITE							
					Med. grained, biotite syenite, max. 20% bio. Scarce tourmaline in 1 cm patches and thin (1-2 mm) veinlettes at 45° to C.A. Generally weak lim'n.						
				29.0-29.2 m:	Mod. to strong kaol'n and lim'n.						
				29.2-29.4 m:	Strong kaol'n, mod. hematite						
				30.5-31.1 m:	Strong kaol'n, mod. hematite						
				32.9-33.2 m:	Xenolith of hornfelsed quartzite. 20% Bio k-fd + Bio veinlettes. Strong potassic alt'n of H-wall, weak at F-wall.						
				35.8 m:	Several small quartzite xenoliths.						
				36.4 m:	Foliated at 30° to C.A.						
				37.2-38.7 m:	2-3% spotty Tour. [illegible] thin [illegible]						

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-5 Sheet 2 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
38.7	39.2	100		CONTACT ZONE										
				Contorted, banded (at 10° to C.A.), hybrid, rusty zone with possible 3-4 cm Tour. vein.										
39.2	49.1	80		HORNFELSED QUARTZITE, FRACTURED AND ALTERED										
				Generally highly fractured and altered with only minor fresh areas.										
				39.2-40.2 m: Highly fractured, weakly hem'd, green-yellow clays on fractures.										
				40.2-41.1 m: Fresh unaltered Hfls. Qtzite.										
				41.1-42.2 m: Similar to 39.2-40.2. Clay well developed below this at 43.3-43.4, 43.6-44.2, 44.5-44.8 m.										
				44.8-46.8 m: Highly fractured, mod. to strongly altered, clay along anastamosing veinlettes.										
				46.8-47.1 m: Fresh, unaltered quartzite.										
				47.1-49.1 m: Moderate alt'n, locally strong lim'n and clay.										
		90		49.1-55.9 m: Moderately fractured, dark hfls. qtzite. Weak bleaching and lim'n, rusty throughout.										
				53.4 m: Poss. 3-4 cm Tour-clay vein.										
				55.0-55.3 m: Poss. Tour. vein										
		75		55.9-57.6 m: Well fractured and altered to clay along fractures.										
		85		57.6-61.6 m: Mod. fractured, relatively fresh. Fractures and joints are cemented with limonite.										
		80		61.6-67.1 m: Well fractured, dark coloured hfls. quartzite Very rusty, <1% Py + Asp. Minor local clay ± tour. along fractures.										
67.1	80.49	90-95		ALTERED GREYWACKE(?)	1% Py									
				Laminated, altered metasediment, possibly a greywacke. Intercalated dark (1-2 cm) and light (1-3 mm) bands at 40° to C.A. Banding is very regular. 1% Py. Rusty from 67.0-72 m and clay alteration from 69.05-69.51 m.										
		90		70.4-74.4 m: Minor hem./lim. along joints at 30° to C.A.	1% Py									
		85-90		74.4-79.6 m: Well fractured with clay/arsenate alt'n along fractures.										
				76.2-76.7 m: Poss. Tour. vein.										
				77.6-77.9 m: Altered Tour. vein.										
		90		79.6-80.49 m: Very well fractured and rusty.										
	80.49			END OF HOLE										
				Terminated due to loss of water pressure and jamming of the rods.										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 18, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS						NTS no. 115 P/14
				Depth	Bearing	Dip	Depth	Bearing	Dip	
Hole no. Z-84-6	Finished July 20,1984	Lat. 18+91E	Lat.							Project no. 95
Bearing 335°	Length 107 m (351 ft.)	Dep. 18+86N	Dep.							Logged by B. Jago
Dip - Collar -55°	Core size NQ	Elev.	Elev.							Sheet 1 of 3

METRES		% Recovery	Graphic Log	DESCRIPTION OF UNITS		% Mineralization	Sample no.	METRES			ASSAYS				
From	To							From	To	Length					
0	4.9			OVERBURDEN											
4.9	52.9			RELATIVELY FRESH SYENITE											
					Hbl-Bio syenite variably altered.										
		95		4.9-7.6 m:	Highly fractured, mod. weathered, friable.										
		100		7.6-17.1 m:	Mod. fractured, fresh syenite. Fol'n at 45-55° to C.A.										
		100		17.1-26.5 m:	Very fresh syenite.										
		90		26.5-26.6 m:	Weakly to strongly foliated at 45° to C.A. Feldspars altered to green clay(?), mafics largely destroyed. Minor clay on fractures.										
		100		26.6-52.9 m:	Fresh syenite, only minor local clay on 2 fractures.										
52.9	53.6	95		WEAKLY ALTERED SYENITE											
					Mod. to highly broken core. Alt'n of feldspar to green clay(?) is complete, destruction of mafics complete except at H-wall.										
				53.6 m:	Olive-green clay, v. friable.										
53.6	56.7	100		FRESH SYENITE											
					Fol'n at 55-60° to C.A.										
56.7				KAOLINIZED, LIMONITIZED SYENITE											
					Moderate to strongly kaolinized, lim'n variable, locally intense. Commonly core is very friable.										
		95		56.7-63.4 m:	Very friable, mod. to strong kaol'n and lim'n. Hbl destroyed, bio. remains.										
		95		63.4-67.7 m:	Similar to above but weaker lim'n, core is fairly competent but well jointed.										
				66.16 m:	1 cm Tour. vein.										
				67.68 m:	Qtz-Tour. vein 1.5 cm wide.										
		90		67.7-68.3 m:	Friable, same as 56.7-63.4 m.										
		90		68.3-70.6 m:	Very friable, broken core, mod. to strong kaol'n, weak lim'n.										
				70.6-72.3 m:	Complete Kaolinization and pervasive lim'n Very friable.										
		100		72.3-75.0 m:	Weakly kaol'd, mod. lim'n. Fol'n at 50-55° and 70-75° to C.A.										
		95		75.0-76.8 m:	Similar to above, but stronger alt'n.										
		70		76.8-78.5 m:	Very friable, strong to complete kaol'n and lim'n. Siliceous from 78.2-78.51 as greisen is approached. Silica is massive but not chalcedonic.										

NORANDA EXPLORATION COMPANY_ LTD. Property ZETA Hole no. Z-84-6 Sheet 2 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	Length	ASSAYS				
78.5	82.16			TOURMALINE-QUARTZ-SULPHIDE-CLAY GREISEN	3-5% Asp									
		100		78.5-80.0 m: Two and possible 3 generation of Tour; 60-65% is 1st generation, 10-15% 2nd, <1% 3rd generation. Remainder of unit is 15% quartz, 3-5% quartz and 5% clay + limonite. Sulphide occurs as 2-3 mm aggregates or as disseminated grains. Vein is brecciated, a feature difficult to observe as core is porous, foliated broken and rusty.										
		100		80.0-80.18 m: Highly clay altered, mod. lim'd/hem'd. Tour. vein.										
		75		80.18-80.24 m: Similar to 78.5-80.0 but broken up.										
		85?		80.24-80.49 m: Highly clay altered Tour. vein as above or possibly a tourmalinized syenite highly alt'd to clay. Sharp F-wall contact with lower sections.										
		95		80.49-82.16 m: Similar to 78.5-80.0. Very porous and brecciated with widespread clay + limonite fracture fillings. 45 cm tour. vein at F-wall alt'd to clay.	3-5% Asp									
82.16	82.32	95		ALTERED SYENITE White to yellow clay, minor tourmalinization of syenite. Sharp F-wall contact with next vein.										
82.32	82.77	95		TOURMALINE-QUARTZ GREISEN Two tourmaline generations, highly alt'd to clay, minor hematitic, quite friable. Sharp F-wall contact with lower section.										
82.77	84.1	45		CLAY ALTERED, KAOLINIZED SYENITE Highly kaol'd syenite intensely alt'd to clay. Minor (10%) tourmalinization. First part of section was lost but bright red sludge suggests strong hem'n. Lower portion is strongly lim'd.										
84.1	88.3			KAOLINIZED SYENITE Locally altered to clay. Variable kaolinized and altered to clay, local lim'n and fol'n.										
		100		84.1-87.0 m: Completely kaolinized with local limonitized, foliated zones at 55° to C.A.										
		100		87.0-88.3 m: Highly kaol'd and alt'd to clay. No mafics and few feldspars left.										
				87.0-87.15 m: 15 cm remnant Tour. vein at 45° to C.A.										
88.3	89.9	100		LIMONITIZED SYENITE Strongly limonitized, weakly to mod. kaol'd Biotite is rel. fresh and c.a.										
89.9	92.8			Generally FRESH SYENITE Syenite is usually quite fresh but has local zones of weak to strong [illegible]										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-6 Sheet 3 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
		100		90.24 m: 2 cm clay vein 91.3 m: 12 cm Tour-Qtz vein at 60° to C.A. 91.8-92.2 m: Mildly bleached but rel. fresh, mod. to strong lim'n from 91.8-91.95 m. 92.2-92.8 m: Fresh syenite.										
92.8	93.1	100		Very fine-grained GRANODIORITE DYKE Fresh intrusion with only mild kaol'n. Contacts at 50-55° to C.A.										
93.1	95.3	100		FRESH SYENITE Several narrow kaol/lim. zones, lim. on all fractures.										
95.3	99.5	100		MODERATELY KAOLINIZED SYENITE Zone of mild to moderate kaol'n and possible silicification. 90% destruction of mafics. Rare Tour. blasts, limonite locally abundant										
99.5	100.2	100		KAOLINIZED SYENITE Strongly kaol'd, igneous textures largely destroyed. F-wall is very clay rich.										
100.2	100.5	95		TOURMALINE-QUARTZ-SULPHIDE GREISEN Vein contains 3 generations of tourmaline. 3-5% Asp in coarse (3-4 mm) patches, rare limonite stains. H-wall contact at 50° to C.A., F-wall at 60°.	3-5% Asp									
100.5	102.4	100		KAOLINIZED, LIMONITIZED SYENITE Still relatively hard and fresh, textures preserved except for the total destruction of the mafics.										
102.4	102.6	100		TOURMALINE-QUARTZ GREISEN Vein contains 2 generations of Tourmaline; very porous, heavily lim'd especially along fractures. Trace Asp in 2-3 mm patches. F-wall contact at 30° to C.A.	<1% Asp									
102.6	104.6	100		KAOLINIZED, LIMONITIZED SYENITE Similar to 100.5-102.4; very friable at 102.6.										
104.6	105.5	100		FRESH SYENITE Very fresh intrusive, only minor lim. at F-wall and H-wall.										
105.5	107.0	95		KAOLINIZED SYENITE Moderately kaolinized, weak lim'n.										
	107.0			END OF HOLE										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 21, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS	NTS no. 115 P/14
Hole no. Z-84-7	Finished July 22, 1984	Lat. 19+25E	Lat.	Depth / Bearing / Dip / Depth / Bearing / Dip	Project no. 95
Bearing 335°	Length 100.9 m (331 ft.)	Dep. 19+18N	Dep.		Logged by B. Jago
Dip - Collar -55°	Core size NQ	Elev.	Elev.		Sheet 1 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
0	4.3			OVERBURDEN										
4.3	55.1	100		FRESH SYENITE Unaltered Hbl-Bio Syenite/Monzonite, well fractured in several areas. 44.5-47.0 m: Slickensides coated with Chl + Hem at 10° to C.A.										
55.1	55.8	100		LIMONITIZED SYENITE, Weakly kaolinized Syenite is moderately to intensely limonitized and weakly to moderately kaol'd. Hbl is partially replaced by biotite.										
55.8	64.0	100		FRESH SYENITE Several fractures filled with lim. + clay at 56.0, 58.7-59.3, 61.9-62.2 and 62.8. Fractures at 40-45° to C.A.										
64.0	65.2	90		LIMONITIZED SYENITE, Variably Kaolinized Weak to complete kaolinization, strong lim'n and foliation at 45° to C.A. Hbl replaced by Bio, Lim + Clay along joints and fractures. 15 cm of clay-Mn-Tour at F-wall.										
65.2	66.6	95		FRESH SYENITE Local kaol'n and lim'n passing to clay alteration at 62.3 m.										
66.6	67.5	90		KAOLINIZED SYENITE Complete kaol'n, minor limonite development in patches and veinlettes at 45° to C.A. Pervasive lim'n at 67.5 m.										
67.5	70.1	90		KAOLINIZED, TOURMALINIZED SYENITE Zone of complete kaolinization and weak to complete tourmalinization as spots and two veins. Also mod. to complete replacement by clay. H-wall marked by sharp contact of lim'n. 67.5-68.0 m: 10-15% Tourmaline spots 68.0-68.06 m: Tourmaline vein, one generation 68.06-68.3 m: Kaolinite + Clay 68.3-70.1 m: 10-15% Tourmaline spots. 69.9 m: 2-3 cm patch of Tour.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-7 Sheet 2 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
70.1	71.6	90		KAOLINIZED SYENITE, Strongly Clay Altered Syenite is completely kaolinized and mod. to completely clay altered. 70.9 m: 1 generation Tour. vein at 45° to C.A., 2-3cm 71.3-71.6 m: Clay zone.										
71.6	73.3	85		TOURMALINE-QUARTZ-SULPHIDE GREISEN 3 generations of Tourmaline comprise 80% of vein, rest is 15% Quartz and 5% sulph + clay + lim. Unit is generally massive but has 2 porous, limonite rich sections. Vein is well fractured and has a crude, porous banding at 30° to C.A.										
73.3	73.6	90		KAOLINIZED CLAY ALTERED SYENITE										
73.6	73.9	90		CLAY ALTERED TOUR. VEIN 2-3 Tour. gen. + Qtz.										
73.9	76.1	90		KAOLINIZED, LIMONITIZED SYENITE Complete kaol'n and intense lim'n with extensive clay development.										
76.1	77.3	90		KAOLINIZED SYENITE ALTERED TO CLAY Scarce tour. patches; limonite concentrated over 15 cm at F-wall.										
77.3	80.5	85		BRECCIATED TOUR.-QTZ-CLAY-SULPHIDE VEIN Contains 2-3 generations of tour. vein fragments cemented by f.g. tour. Several sections strongly altered to clay: 77.28-77.59, 77.90-78.5, and 79.73-80.5 m. Locally porous; some kaol. patches. Fol'n at 45° to C.A.										
80.5	81.4	90		KAOLINIZED, LIMONITIZED SYENITE Completely kaol'd, intensely lim'd. Fol'n at 60° to C.A.										
81.4	82.2	95		TOURMALINE VEIN Highly alt'd to clay, 10% unaltered tour.										
82.2	82.8	100		KAOLINIZED, LIMONITIZED SYENITE 82.3 m: 2 cm tour. vein (1 generation only) at 45° to C.A.										
82.8	83.4	90		TOURMALINED SYENITE ALTERED TO CLAY Extremely clay altered, weakly tourmalinized. Tour. from 82.77-83.08. Weak lim'n throughout.										
83.4	86.4	100		FRESH SYENITE Very strong limonitization along fractures. Fractures at 10-15°, 45° and [illegible]° to C.A.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-7 Sheet 3 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	Length	ASSAYS				
86.4	89.2	100		KAOLINIZED SYENITE										
				Strongly kaol'd syenite cut by 3 tour. veins.										
				86.6 m: 1 cm Tour. vein at 45° to C.A.	Tour vein									
				87.2-87.5 m: Brecciated Tour-Qtz vein. Two generations of Tour, extensive Hem + Clay. 3% Sulph.	3% sulphide									
				88.26-88.32 m: As above with << Lim'n at H-wall and F-wall.	" "									
89.2	92.4	100		FRESH SYENITE										
				Well fractured with Fe/Mn coatings at 10-15° to C.A.										
				90.1-92.4 m: Only minor fractures. 1 cm Tour vein at 91.2 m at 45° to C.A.										
92.4	92.7			KAOLINIZED, LIMONITIZED SYENITE										
				Complete kaol'n, strong fol'n. Fe/Mn on fractures at 30° to C.A. One Tour. veinlette 1 cm wide.										
92.7	99.2	100		FRESH SYENITE										
				Minor secondary Bio, some Fe along fractures.										
				94.2-94.4 m: Tour-Lim veinlette at 60° to C.A.										
				94.4-99.2 m: Coarse grained, fresh syenite.										
99.2	100.0	80		ALTERED SYENITE										
				Zone of strong green-rust coloured alteration. Sharp contact at 30° to C.A.										
100.0	100.6	100		FRESH SYENITE										
100.6	100.9	80?		ALTERED SYENITE										
				Same as 99.2-100.0 m.										
	100.9			END OF HOLE.										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started Aug. 9, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	NTS no. 115 P/14
Hole no. Z-84-8	Finished Aug. 11, 1984	Lat. 9966.0N	Lat.	Project no. 95/82
Bearing 335°	Length 111.1 m (364.5 ft.)	Dep. 9900.0E	Dep.	Logged by B. Jago
Dip - Collar -56°	Core size NQ	Elev.	Elev.	Sheet 1 of 4

DIP TESTS

Depth	Bearing	Dip	Depth	Bearing	Dip
	335°	-55°			

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS
0	3.96	90		OVERBURDEN						
3.96	7.62			FRESH SYENITE						
				Weakly fractured.						
7.62	15.85			WEAKLY KAOLINIZED SYENITE						
		90		7.62-9.45 m: Friable zone with weak kaol'n around Fd.						
		60		9.45-9.91 m: Mod. kaol'n + Lim'n, Hbl → Bio + Chl.						
		85		9.91-10.67 m: Friable zone with mod. kaol'n around Fd.						
		100		10.67-14.02 m: Friable zone of very weak kaol'n.						
				14.02-15.85 m: Weak to mod. kaol'n, friable, Hbl partially biotitized.						
15.85	16.77	50		KAOLINIZED SYENITE						
				Intensely kaolinized, Hbl highly altered to biotite.						
16.77	17.99	75		FRESH SYENITE						
				Fresh but broken intrusive.						
17.99	19.21	100		FINE-GRAINED SYENITE DYKE						
				F.g., Bio. rich phase. 10-15% Bio, 1% Hbl, 85-90% Fd.						
19.21	19.51	100		FRESH SYENITE						
19.51	20.73	100		MODERATELY KAOLINIZED SYENITE						
				Friable kaol'd synite, Hbl strongly altered to Biotite.						
20.73	21.49	100		FRESH SYENITE						
21.49	24.70	85		MODERATELY KAOLINIZED SYENITE						
				Weakly to moderately kaolinized syenite, well broken and quite friable.						
24.70	27.74	85		FRESH SYENITE						
				Only minor kaol'n.						
27.74	28.05	90		INTENSELY KAOLINIZED SYENITE						
				Intense to complete kaol'n, weak to mil lim'n. Mafics are largely destroyed, only minor remnant chlorite. Strong fol'n begins at F-wall.						

NORANDA EXPLORATION COMPANY LTD. - Property ZETA Hole no. Z-84-8 Sheet 2 of 4

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	Length	ASSAYS
28.05	28.35	95		STRONGLY FOLIATED, KAOLINIZED SYENITE						
				Mod. to strongly kao'd, foliated syenite.						
				Mafics largely chloritized but textures						
				remain. Fol'n at 30° to C.A.						
28.35	31.10			FRESH SYENITE						
		95		28.33-29.57 m: Hbl partially replaced by Bio + Chl.						
		100		29.57-30.18 m: Minor mafic destruction.						
		25		30.18-30.34 m: Altered to yellow Kaol, Hbl alt'd to chl,						
				mod. lim'n, minor slickensides.						
		90		30.34-31.10 m: Fresh, friable at F-wall.						
31.10	31.25	90		INTENSELY KAOLINIZED SYENITE						
				Also mod. lim'n, mafics largely destroyed.						
31.25	32.77			FRESH SYENITE						
		97		31.25-32.16 m: Very broken core, fine-grained phase from						
				31.71-32.16 m.						
				32.16-32.77 m: Mildly altered, very broken.						
32.77	33.23	95		KAOLINIZED SYENITE						
				Med. to strong kaol'n.						
33.23	36.42	85		FRESH SYENITE						
				Minor intervals of alt'n, white clay on some						
				joints.						
36.42	36.74	80		INTENSELY FOLIATED, KAOLINIZED SYENITE						
				Soft, intensely foliated and kaolinized syenite.						
				Mafics largely gone except for relic chlor-						
				ite. Fol'n at 45° to C.A.						
36.74	60.98	85		FRESH SYENITE						
				Generally fresh syenite, minor local folia-						
				tion, kao'n, lim'n, and clay veinlettes.						
				44.66 m: 2 cm Fd-Hbl pegmatite.						
				46.04-48.32 m: Weak to mod. kaol'n, strong fol'n at 30°						
				to C.A.						
		80		49.85-50.0 m: Strong fol'n at 40-45° to C.A. Some clay						
				development.						
		75		53.8-53.9 m: Strong fol'n at 30° to C.A.						
		75		55.03-55.79 m: As above but broken and friable.						
		90		59.15-59.45 m: V.f.g. Tour patch in syenite dyke, 2-3 mm						
				Tour-Fd vein.						
		80		59.60-60.98 m: Mildly altered broken syenite. Hbl largely						
				altered to Bio. Lim. on H-wall.						
60.98	63.02	20		BIOTITIZED SYENITE						
				Very friable, intensely altered to Biotite.						
63.02	63.11	100		V.F.G. MICA SYENITE DYKE						
				One 2-3 mm Tour vein bounded by 3-5 mm						
				patches of Tour. Dyke at 45° to C.A.						

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. ZETA Z-84-8 Sheet 3 of 4

METRES		%	Graphic	DESCRIPTION OF UNITS	%	Sample	METRES			ASSAYS				
From	To	Recovery	Log		Mineralization	no.	From	To	Length					
63.11	66.46	75		MILDLY KAOLINIZED SYENITE Very broken core; Hbl largely altered to chlorite and minor Biotite. 65.4 m: Fd-Tour. vein at 45° to C.A.										
66.46	67.07	100		FRESH SYENITE										
67.07	69.51	80		KAOLINIZED SYENITE Very broken core. Syenite is mod. to strongly kaol'd. Strong Lim'n below 68.6 m.										
69.51	70.73	90		FRESH SYENITE Foliated at H-wall.										
70.73	71.95	50		INTENSELY KAOLINIZED, HEMATIZED SYENITE Intense to complete kaol'n and strong hem'n. Mafics largely destroyed. Fol'n at 45° to C.A. Lim > Hem at F-wall.										
71.95	72.85	100		MILDLY KAOLINIZED SYENITE										
72.85	72.90	100		HEMATITE STAINED, KAOLINIZED SYENITE Strongly kaol'd, Hbl + Bio destroyed, 5% Tour. in patches.										
72.90	74.70	80		MILDLY KAOLINIZED SYENITE Moderately altered; pervasive weak to mod. kaol'n. Hbl strongly alt'd to Bio. Mod. fol'n at 30° to C.A.										
74.70	76.2	90		COMPLETELY KAOLINIZED SYENITE Also weak, pervasive lim'n especially along foliation planes at 60° to C.A. (others at 30°). 3% Tour in 4-5 mm patches. Minor Hem. from 75.3-75.5 m.										
76.2	77.0	90		WEAKLY KAOLINIZED SYENITE										
77.0	78.7			KAOLINIZED SYENITE										
		95		77.0-77.4 m: Strongly kaol'd, minor lim.										
		90		77.4-78.0 m: Complete kaol'n; pervasive, mod. lim'n.										
		90		78.0-78.7 m: Complete kaol'n, weak Tour development, intense clay alteration; weak, pervasive lim'n. 78.3 m: 1-2 mm Tour. vein, 65° to C.A.										
78.70	78.96	90		TOURMALINIZED, COMPLETELY KAOLINIZED SYENITE Strong development of Tour. and clay. Gradational to highly decomposed Tour-Kaol vein at 78.97-79.27 m. Two Tour. Tour-Qtz-Sulphide veins (25% Tour. 1-3% Sulph)	1-3% Sulph. (Asp)									

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-8 Sheet [illegible] of [illegible]

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
78.96	82.5	90		HIGHLY KAOLINIZED SYENITE										
				Mild, pervasive lim'n, Hbl largely replaced by Bio.										
		90		78.96-80.6 m: Completely kaol'd.										
				80.6-82.0 m: Strong kaol'n.										
				82.0-82.5 m: Complete kaol'n, mod. Lim'n. Alt'n banding at 50-55° to C.A.										
82.5	83.4	100		TOURMALINE VEIN/REPLACEMENT ZONE										
				Tour. disseminated in 5-8 mm patches; very strong clay alteration; cut by Tour. veins.										
				82.62-82.68 m: Brecciated Tour-Qtz-Sulph vein with clay stringers. 2-3 tour. gen.	1-3% Asp									
				82.87-82.96 m: As above.										
				82.99-83.38 m: Intense Tour-Clay alt'n, 30-70% Tour. Sharp contact at F-wall.	Tour. alt'n									
83.4	86.6	80		LIMONITIZED, KAOLINIZED SYENITE										
				Completely kaolinized, local patchy lim. or along fractures. Minor Tour.										
		25		83.4-83.8 m: Small frags. of lim. stained kaolinite.										
				83.8-84.5 m: Intense lim'n at 45° to C.A., slickensides at 75-80° to C.A.										
				84.5-85.1 m: Very soft clay alt'd zone with tour spots.	Tour. spots									
				85.1-85.8 m: Kaolinite with minor lim, possibly 1 cm Tour. core.										
				85.8-86.6 m: As above but stronger lim'n.										
86.6	89.2	90		STRONGLY KAOLINIZED, CLAY ALTERED SYENITE										
				Mafics destroyed but textures remain, scant Tour patches 3-5 mm across. Fol'n at 45° to C.A. Variable lim'n.										
				87.7-87.8 m: Limonitized.										
				87.8-89.2 m: Pervasive lim'n.										
89.2	90.85	100		MILDLY KAOLINIZED SYENITE										
90.85	91.31	100		INTENSELY KAOLINIZED SYENITE, PERVASIVE LIMONITE										
				Very friable section of highly altered rock. 70% Hbl + Bio(?).										
91.31	92.1	95		MODERATELY KAOLINIZED SYENITE										
92.1	92.5	90		COMPLETELY KAOLINIZED, LIMONITIZED SYENITE										
				Moderate, pervasive limonite.										
92.5	93.8	100		BLUE KAOLINITE?										
				Hard (H=6-7), blue kaolinite(?), replacement of yellow kaolinite. Local limonite veinlettes. Zone is very competent.										
93.8	95.1	100		STRONGLY KAOLINIZED, LIMONITIZED SYENITE										
				Pervasive mild to mod. lim'n, only minor remnant mafics.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-8 Sheet 5 of 5

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
		95		94.2-94.5 m: Fresh syenite										
95.1	97.9	95		FRESH SYENITE Only mild kaol'n, well fractured, Mn along joints.										
97.9	102.4	100		KAOLINIZED SYENITE Mod. to strongly kaolinized. C.A. at 45°.										
102.4	102.7	100		FRESH SYENITE										
102.7	103.0	100		FOLIATED, KAOLINIZED, LIMONITIZED SYENITE Highly foliated at 45° to C.A., strongly to completely kaolinized and limonitized syenite. Possible 1 cm Tour vein at F-wall.										
103.0	103.4	100		FRESH SYENITE										
103.4	108.1	100		KAOLINIZED, LIMONITIZED SYENITE Weakly to moderately kaol'd and lim'd. 106.1-106.15 m: Fol'n at 45°.										
108.1	111.1	100		FRESH SYENITE										
	111.1			END OF HOLE										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started Aug. 13, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS						NTS no. 115 P/14
Hole no. Z-84-9	Finished Aug. 15, 1984	Lat. 9,924N	Lat.	Depth	Bearing	Dip	Depth	Bearing	Dip	Project no. 95/82
Bearing 335°	Length 128.05 m (420 ft)	Dep. 10,150E	Dep.							Logged by B. Jago
Dip - Collar -55°	Core size NQ	Elev.	Elev. 1453.8							Sheet 1 of

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
0	3.05			OVERBURDEN										
3.05	20.1	70		FRACTURED, HEMATIZED, CLAY ALT'D HORNFELSED QUARTZITE Extremely fractured and altered rock. Some quartz vein from 14.94-15.24 m.										
20.1	27.7	90		EXTREMELY CLAY ALTERED SYENITE(?) Also mod. kaol'n, lim'n, chl'n, hem'n, and Mn staining. Numerous slickensides at 70-90° (?) to C.A.										
27.74	28.35	10		BROKEN, HEMATIZED METASEDIMENT Very broken, hem'd, laminated siliceous greywacke or quartzite.										
28.35	31.25	90		CLAY ALTERED, KAOLINIZED SYENITE Less altered than 3.05-20.1 m. Highly foliated at 30° to C.A.										
31.25	37.80	75		HORNFELSED QUARTZITE Very broken, local clay alteration.										
37.80	38.41	100		SYENITE Mildly altered, biotite syenite. C.A. @ 45°.										
38.41	39.63	85		HORNFELSED QUARTZITE Relatively fresh but very broken, trace clay.										
39.63	49.70	85		CLAY ALTERED SYENITE Very clay altered, med. grained biotite syenite. Several small metasediment xenoliths.										
49.70	50.61			HORNFELSED QUARTZITE Varies from clean to argillaceous; broken but unaltered.										
50.61	50.91			LAMINATED SILICEOUS GREYWACKE Bedding at 45° to C.A.										
50.91	51.83			HORNFELSED COARSE CLASTIC										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-9 Sheet 2 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
51.83	54.27			BRECCIATED COARSE CLASTIC Very angular fragments cemented by more ductile clay-silt matrix. No alteration.										
54.27	56.40			HORNFELSED QUARTZITE Fine-grained, dark unit altered with clay and limonite stringers from 55.95-56.10 m.										
56.40	58.23			INTENSELY KAOLINIZED, CLAY ALTERED SYENITE H-wall contact at 25° to C.A., F-wall at 10-15°.										
58.23	63.72			HORNFELSED COARSE CLASTIC TO GREYWACKE Medium-grained, highly altered to clay ± hem. from 58.23-58.53 m, 58.84-60.67, and 62.80-63.72 m.										
63.72	65.24			HIGHLY CLAY ALTERED, KAOLINIZED SYENITE 15 cm of clay + hem at H-wall, elsewhere med to very strong kaol'n and clay alt'n										
65.24	67.99			SILICEOUS GREYWACKE Weak to mod. clay alt'n, locally brecciated.										
67.99	68.90			LIMONITIZED SYENITE Moderately lim'd bio. syenite.										
68.90	71.04			CLAY ALTERED, LIMONITIZED GREYWACKE Very intense alteration from 70.43-70.73 m.										
71.04	83.23			SILICEOUS GREYWACKE Locally laminated; weakly lim'd and clay alt'd.										
83.23	85.37			UNALTERED GREYWACKE/COARSE CLASTIC Dark metasediment with minor lim. on fractures.										
85.37	87.20			CLAY ALTERED, KAOLINIZED SYENITE Highly altered to clay and kaolinite, fine to medium grained syenite. Very broken along F-wall.										
87.20	108.99			ALTERED, LAMINATED GREYWACKE Mildly to highly clay altered, laminated to siliceous greywacke. Bedding at 20° to C.A. Clay/lim. typically in anastamosing veinlettes. Very broken and clay altered with minor arsenate at: 88.11-90.55 m, 92.07-94.82 m, 95.58-96.65 m, 97.41-98.02 m, 98.23-99.70 m, 100.15-105.18 m, 105.49-107.67 m, and 108.32-108.99 m. Possible Tour.-clay vein between 93.14 and 93.23m										
108.99	110.98			UNALTERED COARSE CLASTIC Minor limonite along fractures at 45° to C.A.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-9 Sheet 3 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	Length	ASSAYS				
110.98	116.31			LAMINATED, SILICEOUS GREYWACKE										
				Badly broken with widespread Lim. + Mn stains										
				112.56 m: Malachite along one joint plane with Lim + Mn. Host rock unaltered.	Tr malachite									
				112.95-113.26: Cave. Scarce, hem'd frags. Bedding at 45° to C.A.										
116.31	117.84			ALTERED, LAMINATED, SILICEOUS GREYWACKE.										
				Highly altered to clay and limonite, badly broken.										
117.84	128.05			LAMINATED, SILICEOUS GREYWACKE										
				Unaltered but mildly broken up, some lim. + Mn along fractures.										
	128.05			END OF HOLE.										

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started Aug. 17, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS	NTS no. 115 P/14
Hole no. Z-84-10	Finished Aug. 19, 1984	Lat. 10,050E	Lat.	Depth / Bearing / Dip / Depth / Bearing / Dip	Project no. 95/82
Bearing 335°	Length 125.91 m (413 ft.)	Dep. 9,955N	Dep.		Logged by B. Jago
Dip - Collar -56°	Core size NQ	Elev.	Elev.		Sheet 1 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
0	4.3			OVERBURDEN										
4.3	76.82	90-100		SYENITE										
				Generally fresh, locally altered and fractured.										
				Upper 34.76 m is weakly kaolinized and weathered										
				with minor broken sections. Rest is quite										
				fresh with local foliation at 35-45° to C.A.										
				73.93 m: 1-2 cm wide Tour. vein at 60° to C.A.										
				75.61-75.73: Weakly tourmalinized with weak limonite and										
				kaol'n.										
76.82	79.42	90		COMPLETELY KAOLINIZED, LIMONITIZED SYENITE										
				Moderate to strong lim'n, complete kaol'n but	<1% Tour.									
				some remnant textures. <1% diss. Tour., slight-										
				ly higher at 76.98.										
				77.41-78.20: 2-3 cm Tour. vein and zone of 10-15% diss.										
				Tour.										
79.42	79.88	100		TOURMALINE-KAOLINITE REPLACEMENT ZONE	1-3% Asp.									
				79.42-79.57: 20% Tour + 1-3% Asp in kaol. Alt'n banding										
				at 25-30° to C.A.										
				79.57-79.88: 2 generation Tour + Qtz + kaol. vein, 5-7%										
				Asp; brecciated.	-57% Asp									
79.88	81.92			KAOLINITE ZONE										
				Strongly foliated from 79.88-79.94, Tour.										
				decreases to 0% at 79.94, massive kaolin										
				with minor limonite below this.										
81.92	82.10	100		FRESH SYENITE										
82.10	82.50	100		FOLIATED KAOL'D, LIM'D SYENITE										
				Strongly foliated with moderate kaol'n and										
				lim'n. Fol'n @ 30° to C.A. Minor Tour.										
				at 81.89.										
82.5	83.23	100		FRESH SYENITE										
				Minor foliation at 30° to C.A.										
83.23	83.84	90		FOLIATED, KAOLINIZED, LIMONITIZED SYENITE										
				Strong to complete kaol'n and lim'n, highly										
				foliated at 30° to C.A.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-10 Sheet 2 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
83.84	86.49	100		LIMONITIZED, COMPLETELY KAOL'D SYENITE Mild to mod. lim'n, complete kaol'n. Limonite decreases to 84.76, after that it occurs only along fractures.										
86.49	87.26	100		KAOLIN. Green-blue kaolin and yellow-green kaolin.	<<1% Sulph.									
87.26	89.32	100		RELATIVELY FRESH SYENITE Mild kaol'n below 87.53 and biotitization below 88.11 m.										
89.32	91.76	90		LIMONITIZED, COMPLETELY KAOL'D SYENITE Moderate to strong lim'n; complete kaol'n. <1% diss. Tour. throughout, very porous at 90.82 m.										
91.76	92.40	90		HIGHLY ALTERED SYENITE Weak lim'n, very strongly clay alt'd, complete kaol'n. Banded (at 30° to C.A.) and pitted sulphides (3-5% Asp rhombs?) 91.81-91.83: Tour-clay vein at 45°.										
92.40	92.88	90		LIMONITIZED, COMPLETELY KAOL'D SYENITE Strong lim'n; strong clay alt'n at F-wall.										
92.88	93.19	85		CLAY ALTERED, KAOLINIZED SYENITE Highly altered to clay and kaolinite slickensides at 45° to C.A.(?)										
93.19	93.32	95		BRECCIATED TOUR-CLAY-LIM. VEINLETTES 85%, 2-3 generations of Tour, 10-12% Qtz, 1% Clay, 1-2% Asp. Fol'n at 45°	1-2% Asp									
93.32	93.47	95		CLAY ALTERED, KAOLINIZED SYENITE Completely alt'd.										
93.47	96.04			TOURMALINE-QUARTZ-CLAY-SULPHIDE GREISEN VEIN Variably altered, brecciated and mineralized										
		85		93.47-93.65: Brecciated, clay alt'd, arsenate stained, 2-3 Tour-Qtz-Clay-Asp (1-3%) vein. Very porous.	1-3% Asp									
		90		93.65-93.90: Very clay alt'd, kaol. zone, 1% diss. Tour. Well foliated at 45° to C.A.										
		95		93.90-94.80: Very porous, 2-3 Tour-Qtz-Clay vein. Brecciated by Tour-Clay-Lim veinlettes.	No visible sulphides									
		100		94.80-95.05: Clay-Kaol. zone with 20% highly alt'd Tour. Gradational to lower zone.										
		95		95.05-95.50: Three Tour-Qtz-Asp (3-5%) vein. Not porous but weakly brecciated. Appears strongly weathered(?).	3-5% Asp									
				95.50-95.73: Very clay altered, kaol'd syenite with 5% alt'd Tour. Sharp H-wall and F-wall.										
				95.73-96.04: Massive 2-3 Tour-Qtz (5-10%) vein. Weakly brecciated, no visible sulphides.										

NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-10 Sheet 3 of 3

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
96.04	96.55	90		WEAKLY TOURMALINIZED, COMPLETELY KAOLINIZED SYENITE Minor local limonite, strong clay alt'n at F-wall.										
96.55	98.32	90		VARIABLE ALTERED SYENITE Weak to intensely altered, m.g. bio + hbl syenite. Much finer grained than H-wall. Limonite common along joints.										
98.32	99.08	90		LIMONITIZED, KAOLINIZED SYENITE Very strong lim'n and kaol'n, intense clay alt'n at F-wall.										
99.08	99.60	95		FRESH SYENITE										
99.60	105.18	90		KAOLINIZED SYENITE Moderately to strongly kaolinized syenite with minor limonite.										
105.18	105.95	80		INTENSELY KAOLINIZED, LIMONITIZED SYENITE Strong biotitization of hornblende, core very broken.										
105.95	110.37	95		MODERATELY ALTERED SYENITE Mod. kaol'n; lim + Mn along joints and fractures at 75-90° to C.A. 107.47-110.37: Includes metased. xenoliths. Strong Bio'n and clay veinlettes.										
110.37	125.91			HORNFELSED QUARTZITE										
		90		110.37-111.43: Contact (at 45° to C.A.) is slickensided with lim + chl coatings.										
		15		111.43-114.63: Very altered, hfls'd gritty quartzite. Extremely broken, possibly v.f.g. Asp(?)										
		80		114.63-115.55: As above but better recovery.										
		10		115.55-116.77: Unaltered but very broken.										
		75		116.77-118.29: As above but better recovery.										
		5		118.29-119.36: Siliceous greywacke.										
				119.36-119.51: Laminated sil. greywacke, very broken, clay + arsenate altered.										
				119.51-125.91: Laminated, sil. greywacke. Unaltered, bedding at 45°.										
	125.91			END OF HOLE.										

NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED July / 24 / 84 CODE 8408 008 SHEET 1

MATERIAL SOIL - SILT DATE ANALYSED Aug / 2 / 84 ANALYST RF

REMARKS Cu, Zn, Pb, Ag, As in ppm;
0.2g / 2ml $HClO_4$: HNO_3 → 5ml

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As								
147	17.5E - 19.5N		16	100	18	0.2	22								
8	- 19.75		16	80	16	0.2	24								
9	17.5E - 20N		14	48	12	0.2	28								
150	CHECK NL-5		26	72	68	1.2	54								

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NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED July / 24 / 84 CODE 2408-005 SHEET 2

MATERIAL Soil - silt DATE ANALYSED Aug / 2 / 84 ANALYST R.F.

REMARKS Cu, Zn, Pb, Ag, As in ppm

0.2g / 2ml HClO4 : HNO3 → 5ml

T.T. NO.	SAMPLE NO.			Cu	Zn	Pb	Ag	As							
1	CHECK NL-5			24	68	66	1.4	58							
2	17.5E - 19.25N			18	120	200	1.4	160							
3	19			22	120	110	1.2	260							
4	18.75			12	68	6	0.2	18							
5	18.5			12	68	6	0.2	10							
6	18.25			14	70	4	0.2	<2							
7	17.5E - 18 N			16	80	6	0.2	6							
8	16.5E - 20 N			18	150	28	0.2	58							
9	19.75			16	150	26	0.2	20							
10	19.5			14	130	26	0.6	20							
1	19.25			8	30	8	0.2	4							
2	19			16	130	110	1.6	130							
3	18.75			26	150	20	0.4	58							
4	18.5			14	78	44	0.4	46							
5	18.25			14	84	6	0.2	<2							
6	16.5E - 18 N			12	84	8	0.2	4							
7	15.5E - 20 N			16	78	20	0.2	20							
8	19.75			14	78	22	0.2	42							
9	19.5			14	100	24	0.4	44							
20	19.25			14	120	58	1.4	66							
1	19			16	140	24	0.4	80							
22	15.5E - 18.75N			16	110	58	0.6	120							

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NORANDA GEOCHEM LABORATORY

LOCATION: ZETA — PROJECT: 95 — COLLECTOR: RJ — DATE RECEIVED: July / 24 / [illegible] — CODE: [illegible] — SHEET: 3

MATERIAL: Soil - Silt — DATE ANALYSED: Aug / 3 / [illegible] — ANALYST: E. [illegible]

REMARKS: Cu, Zn, Pb, Ag, As in ppm

T.T. NO.	SAMPLE NO.			Cu	Zn	Pb	Ag	As							
23	15.5E - 18.5 N			20	110	120	1.2	240							
4	18.25			14	72	14	0.2	16							
5	15.5E - 18 N			12	76	10	0.2	<.2							
6	44334	SILT		28	100	26	0.4	140							
7	38	SILT		44	200	30	1.4	170							
8	43			12	46	18	0.2	16							
9	44			14	64	10	0.2	18							
30	45			16	60	16	0.2	20							
1	47			14	380	32	0.2	36							
2	48			32	150	32	0.2	10							
3	49			28	170	36	0.2	10							
4	60	SILT		20	120	10	0.2	20							
5	61			26	650	10	0.2	26							
6	44302			26	160	20	0.2	14							
7	44773			22	68	12	0.2	8							
8	74			18	66	10	0.2	10							
	44775			18	58	12	0.2	12							
40	400E - 400N			28	100	18	0.4	34							
	400.25			16	80	20	0.6	10							
2	400.5			14	82	6	0.2	10							
3	400.75			12	60	6	0.2	24							
44	400E - 300 N			18	64	8	0.4	20							

NORANDA GEOCHEM LABORATORY

LOCATION: ZETA　PROJECT: 95　COLLECTOR: BJ　DATE RECEIVED: July / 24 / 84　CODE: 8405-008　SHEET: 4

MATERIAL: Soil - silt　DATE ANALYSED: Aug / 2 / 84　ANALYST: RF

REMARKS: Cu, Zn, Pb, Ag, As in ppm
0.2 g/2ml HClO4 : HNO3 → 5ml

T.T. NO.	SAMPLE NO.			Cu	Zn	Pb	Ag	As							
45	400E - 500.25N			18	72	4	0.2	24							
6	500.5			12	28	8	0.2	6							
7	500.75			18	80	8	0.2	28							
8	400E - 600N			20	80	8	0.2	34							
9	500E - 400N			14	72	8	0.2	12							
50	400.25			12	80	14	0.2	16							
	400.5			12	90	18	0.2	10							
2	400.75			14	96	16	0.4	10							
3	500			8	54	26	0.2	6							
4	500.25			16	70	14	0.2	16							
5	500.5			20	82	14	0.2	42							
6	500.75			28	110	12	0.2	42							
7	500E - 600N			22	100	14	0.2	24							
8	600E - 400N			16	82	18	0.2	44							
9	400.25			14	74	10	0.2	18							
60	400.5			14	80	12	0.2	30							
1	400.75			10	92	16	0.2	24							
2	500			20	98	14	0.2	24							
3	500.25			10	58	14	0.2	24							
4	500.5			12	130	20	0.4	36							
5	500.75			32	110	20	0.6	34							
66	600E - 600N			10	50	6	0.2	4							

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APPENDIX E

ROCK GEOCHEMICAL RESULTS

Bondar-Clegg & Company Ltd.
130 Pemberton Ave.
North Vancouver, B.C.
Canada V7P 2R5
Phone: (604) 985-0681
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BONDAR-CLEGG

Geochemical Lab Report

REPORT: 124-1906

PROJECT: 35 8405-907 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Pb PPM	Zn PPM	Ag PPM	As PPM	Au PPB	Sb PPM	Sn PPM	NOTES
R 20817		23	99	42	5.7	110	<5			
R 20818		25	250	28	2.4	220	<5			
R 20819		14	30	26	0.4	14	<5			
R 20820		12	34	20	0.4	20	<5			
R 20821		23	257	35	1.9	30	<5			
R 20822		11	194	30	1.5	14	<5			
R 20823		17	14	16	0.3	22	<5			
R 20824		13	10	16	0.3	14	<5			
R 20825		20	17	27	0.2	17	<5			
R 35360		34	50	30	0.2	> 1000	10	245	325	
R 35361		139	310	540	22.0	> 1000	35	200	315	
R 35363		24	50	20	6.2	300	<5			
R 35364		1360	199	35	> 50.0	> 1000	<5	425		
R 35366		32	44	32	0.4	> 1000	<5	200		
R 37492		282	107	56	> 50.0	> 1000	115	320	495	
37493		75	25	16	8.9	> 1000	210	240	1160	
R 37500		755	> 10000	234	> 50.0	> 1000	30	5200		
R 44255		14	159	103	1.4	110				
R 44342		48	89	72	1.3	125				
R 44350		50	10	80	0.2	25				
R 44352		47	28	90	0.5	42				
R 44353		64	10	208	<0.2	13				
R 44354		46	19	36	<0.2	16				
R 44355		10	223	7	0.9	750				
R 44356		45	12	101	0.4	46				
R 44363		54	410	292	1.1	50				
R 44364		6	55	93	0.2	27				
R 44365		67	6480	1180	> 50.0	> 1000				
R 44366		88	615	900	30.0	> 1000				
R 44376		14	41	280	0.4	120	<5			
R 44377		28	25	24	0.4	90	<5			
R 49753		16	835	600	4.8	> 1000		105		
R 49757		6	152	210	0.7	110	<5	40		
R 49758		3	19	18	<0.2	34		17		
R 49759		5	450	460	2.4	240	<5	180		
R 49764		166	475	840	17.0	> 1000	45			

NORANDA GEOCHEM LABORATORY

LOCATION ZETA PROJECT 95 COLLECTOR BJ DATE RECEIVED July / 13/84 CODE 8407-038 SHEET 1

MATERIAL Rock DATE ANALYSED Aug / 7 / 84 ANALYST R.F.

REMARKS Cu, Zn, Pb, Ag, As in ppm. Au in ppb.

S = Sulphides

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As	Au
41	20801		12	82	2	0.2	40	
2	02		14	74	2	0.2	8	
3	03		14	98	2	0.2	20	
4	04		2	6	70	1.8	42	
5	05		320	430	20,000	130.	100,000	
6	06		22	38	32	0.4	240	
7	07		20	42	180	1.6	1200	
8	08		16	32	8	0.2	80	
9	09		16	38	20	0.4	140	
50	10		12	28	40	0.4	260	
1	11		16	76	16	0.2	140	
2	12		52	80	2700	28.	4000	
3	13		104	100	1300	110.	2400	
4	14		58	100	1800	50.	880	
5	15		160	200	9600	150.	6400	
6	20816		1000	230	12,000	3200.	76,000	
7	20830	S	480	140	11,000	36.	100,000	
8	31 A		14	150	200	8.4	1100	
9	31 B		16	92	44	0.4	190	
60	32		26	16	64	9.4	330	
1	33		100	42	16	0.8	76	
62	20834		40	150	32	1.4	84	

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NORANDA GEOCHEM LABORATORY

LOCATION: ZETA PROJECT: 95 COLLECTOR: BJ DATE RECEIVED: July / 13/84 CODE: 840-038 SHEET: 2

MATERIAL: Rock DATE ANALYSED: Aug / 7 / 84 ANALYST: G.F.

REMARKS: Cu, Zn, Pb, Ag, As in ppm. Au in ppb.

T.T. NO.	SAMPLE NO.		Cu	Zn	Pb	Ag	As				Au				
63	20835		20	86	14	0.4	20								
4	39		28	110	190	1.6	130								
5	40		40	80	940	11.	2200								
6	41		32	160	170	1.6	140								
7	42		112	140	9000	52.	4400								
8	43		130	86	11,000	86.	4400								
9	44		26	72	360	2.6	200								
70	45		20	94	88	1.2	84								
1	46		22	64	250	2.0	150								
2	47		24	66	200	2.4	160								
3	48		18	76	14	0.4	<2								
4	49		16	56	18	0.6	16								
75	20850		14	70	8	0.4	44								

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APPENDIX F

MULTI-ELEMENT SCANS, ZETA DRILL CORE AND GRAB SAMPLES

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Telephone (604) 984-0221
Telex 043-52597

CERTIFICATE OF ANALYSIS

To : NORANDA EXPLORATION CO. LTD.

P.O. BOX [illegible]
VANCOUVER, B.C.
V6B [illegible]

CERT. # : A84[illegible]-001-A
INVOICE # : I84[illegible]
DATE : [illegible]
P.O. # : NONE
95

[illegible] (cont'd) [illegible]

Sample description	Mo ppm (ICP)	W ppm (ICP)	Zn ppm (ICP)	P ppm (ICP)	Pb ppm (ICP)	Bi ppm (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Ni ppm (ICP)	Ba ppm (ICP)	Fe % (ICP)	Mn ppm (ICP)	Cr ppm (ICP)	Mg % (ICP)	V ppm (ICP)	Al % (ICP)	Be ppm (ICP)	Ca % (ICP)	Cu ppm (ICP)	Ag ppm AAS	Ti % (ICP)	Sr ppm (ICP)	Na % (ICP)	K % (ICP)
37441 ([illegible])	129	<10	69	375	2300	34	8.0	<1	<1	665	3.98	165	120	0.38	13	5.59	2.5	0.12	184	>200.0	0.151	75	0.55	1.77
37448 ([illegible])	26	<10	210	640	5300	77	15.5	<1	<1	380	9.68	270	125	0.53	10	5.63	3.0	0.13	210	>200.0	0.103	260	0.8[illegible]	0.5[illegible]
49466 ([illegible])	33	<10	98	415	2660	47	6.5	<1	<1	60	6.80	265	55	0.58	9	4.51	1.5	0.14	255	>200.0	0.096	101	0.72	0.14
49540 "	12	<10	82	345	>10000	5	40.0	<1	3	510	4.04	164	780	0.35	23	3.59	1.0	0.11	73	>200.0	0.09[illegible]	67	0.4[illegible]	[illegible]

SAMPLE NO.	D.D.H.#	INTERVAL
37441	2	43.4-44.6m
37448	3	23.5-24.4m
49466	6	80.5-81.4m
49540	7	77.3-78.2m

BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A 4X1

PHONE: (403) 667-6523
TELEX: 036-8-460

Geochemical Lab Report

FROM: Noranda Exploration
REPORT NUMBER: 43-93

PROJECT: Del Ferguson
DATE: Sept. 29, 1983

SAMPLE NUMBERS	% Fe	ppm Be	ppm Li	ppm Ba	ppm Nb	ppm Rb	ppm Sr	ppm Ta	% Al
35226 } TRENCH ONE	6.850	5	14	400	L 1	L 8	181	L 8	7.830
35227 } TRENCH ONE	7.340	4	19	228	L 1	L 8	165	L 8	8.310
35228 } TRENCH ONE	4.300	4	15	1040	L 1	152	142	L 8	7.990
35229 } TRENCH ONE	8.600	4	20	108	L 1	L 8	180	L 8	10.600
35237 → GASH	6.990	2	18	79	L 1	L 8	270	L 8	6.980

SAMPLE NUMBERS	% Mg	% Ca	% Na	% K	ppm Bi	ppm V	ppm As	ppm Te	ppm U
35226	0.520	0.270	0.620	0.200	50	18	G2000	L3	2
35227	0.660	0.200	0.700	0.130	123	36	G2000	L3	L2
35228	0.440	0.140	0.370	2.000	39	48	G2000	L3	2
35229	0.580	0.150	0.830	0.230	100	32	G2000	L3	4
35237	1.160	0.270	0.630	0.690	246	106	G2000	L3	11

SAMPLE NUMBERS	ppm W	ppm Sb	ppm Se	ppm Sn	ppm Cu	ppm Pb	ppm Zn	ppm Mo	ppm Co
35226	L2	12000	10	627	476	G2000	189	1	1
35227	L2	6140	L5	517	394	9940	154	3	1
35228	L2	2160	5	457	123	7680	110	6	L1
35229	L2	2040	5	512	101	7860	167	13	L1
35237	L2	401	20	446	317	1160	235	8	19

SAMPLE NUMBERS	ppm Ni	ppm Cr	ppm Cd	ppm Ag
35226	4	101	36.4	G100
35227	3	171	25.1	G100
35228	5	178	15.5	G100
35229	3	238	6.5	G100
35237	12	284	33.0	G100

* samples also analyzed under report # A43-137

FOR METHOD, EXTRACTION AND FRACTION USED – SEE ATTACHED

APPENDIX G

DETAILED DRILL LOGS

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 8, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS	NTS no. 115 P/14
Hole no. Z-84-1	Finished July 8, 1984	Lat. 18+97E	Lat.	Depth / Bearing / Dip / Depth / Bearing / Dip	Project no. 95
Bearing 335°	Length 40.1 m (132 ft.)	Dep. 19+42N	Dep.		Logged by B. Jago
Dip - Collar -45°	Core size NQ	Elev.	Elev.		Sheet 1 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS Ag	Pb	Sn	As	Sb
0				OVERBURDEN										
6.5	20.7			FRESH TO HIGHLY ALTERED SYENITE: Fresh syenite is K-feldspar phyric with varying % of phenocrysts in a coarse-grained groundmass of 15-20% Hbl + Bio, feldspar and minor quartz.										
		100		6.9 m: Slickenside @ 60° to C.A.										
		100		6.9-7.0 m: Kaolinization and minor limonite.		49478	7.96	8.23	0.27	0.28				
		75		12.4-16.2m: Friable section of weakly to moderately kaolinized syenite. Hbl altering to Bio.										
		85		16.2-16.6 m: Extensive kaolinite and limonite. Tourmaline + Fe/Mn stains on fractures. Core is friable.										
		80		16.6-17.2 m: Syenite weakly kaolinized and altered to biotite. Foliation at 45° to C.A.										
		95		17.2-17.8 m: Extensive kaolinite and limonite. Strongly foliated. Two thin (1-4mm) tourmaline ± qtz veins at 55° to C.A.										
		95		17.8-19.8 m: Weakly kaolinized and Biotized. Minor limonite stained slickensides. Local strong foliation @ 70° to C.A.										
		100		19.8-20.7 m: Strongly kaolinized and limonitized. Mafic minerals destroyed, local foliation @ 70° to C.A.										
20.7	23.3	100		TOURMALINE-QUARTZ ± CLAY ± SULPHIDE GREISEN VEINS:										
		100		20.7-22.0 m: Tourmaline - Qtz - Clay - Sulphide Greisen Three tourmaline varieties: 1) Black, 2) Blue-Green, 3) Brown, comprise 60-65% of vein, with 25-30% Qtz, 5-10% Clay+sulphides + others. Sulphide comprises 1-3%, appears to be v.f.g. Asp. Limonite, talc and secondary arsenates are common throughout the vein. Hanging wall consists of 6 cm of white to yellow talc with limonite well developed at the contact. Footwall is similar but with less limonite, contact is very sharp.										

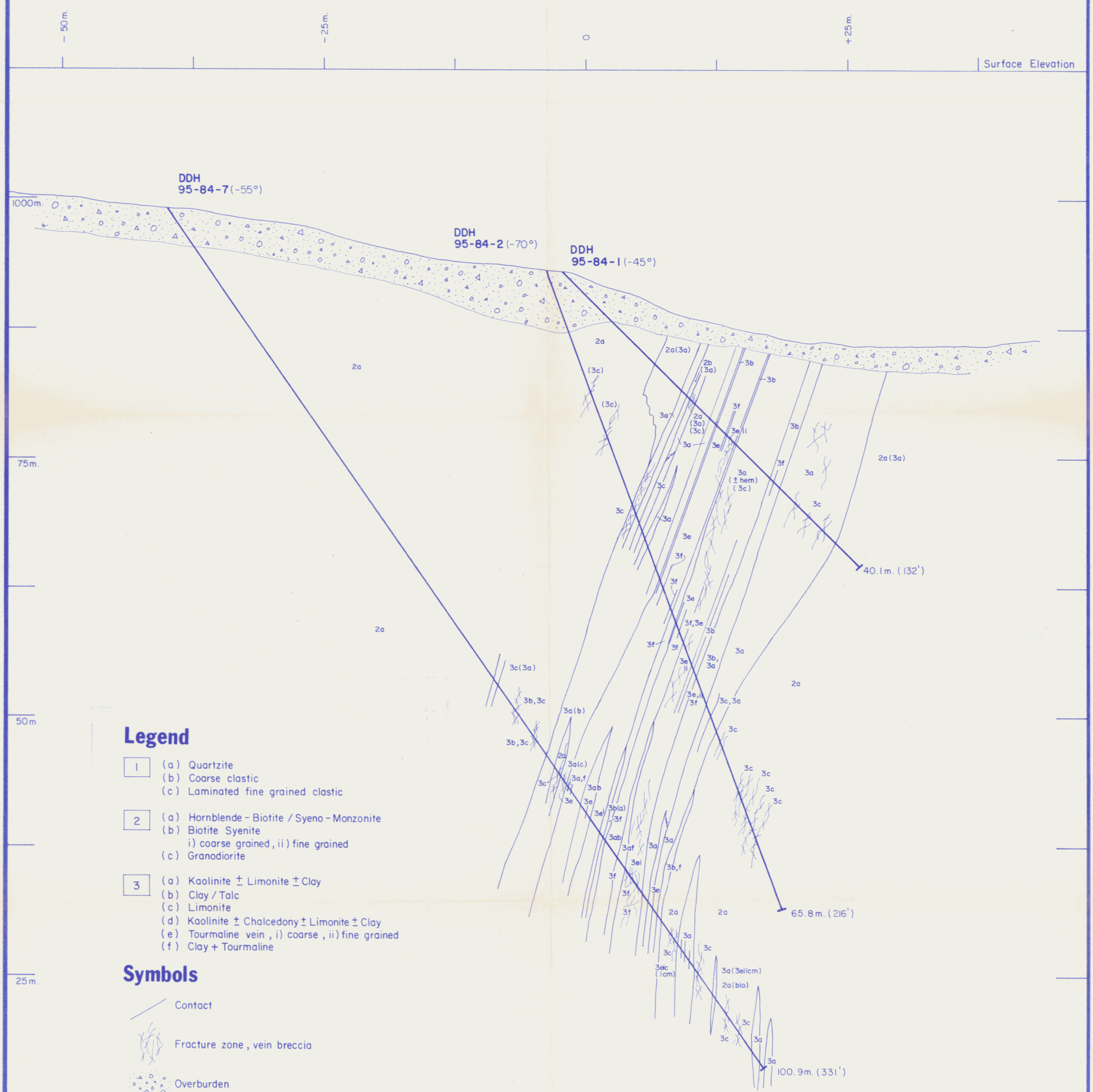
NORANDA EXPLORATION COMPANY LTD. Property ZETA Hole no. Z-84-1 Sheet 2 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS
		100		22.0-23.3 m: BRECCIATED TOUR-QTZ VEIN. Extensive lim. staining. Breccia fragments to 1.5 cm. Zone is foliated, friable, possibly an extensive kaolinite zone. Hanging wall is 15 cm of yellow talc with limonite and fragments of highly alt'd syenite. Minor arsenate stain at 22.25 m.						
23.3	36.9			HIGHLY ALTERED SYENITE WITH LOCAL TALC.						
		55		23.3-28.0 m: Completely kaolinized Syenite with moderate hem./lim'n. Short intervals are highly foliated with limonite along fractures. Rare Qtz-Tour. veinlettes on fractures. Mafics totally destroyed.						
				28.0-29.3 m: TALC ZONE. White to yellow talc; 5 cm of tourmaline @ 28.5 m.						
				29.3-36.9 m: Completely kaolinized Syenite, moderately to strongly limonitized. Highly foliated and locally very friable. 1 cm Tour. vein at 30.8 m. Limonite strongest along x-[illegible]ting fractures. Core recovery from 34.4-36.[illegible] is 40%.						
36.9	40.1	100		RELATIVELY FRESH SYENITE Only weakly kaolinized, friable sections @ 38.5-38.6 m, 39-39.5 m. Fol'n @ 50-55° to C.A.						
	40.1			END OF HOLE.						

NORANDA EXPLORATION COMPANY LTD.

Property ZETA	Started July 9, 1984	FIELD CO-ORDINATES	SURVEYED CO-ORDINATES	DIP TESTS	NTS no. 115 P/14
Hole no. Z-84-2	Finished July 9, 1984	Lat. 18+97E	Lat.	Depth / Bearing / Dip / Depth / Bearing / Dip	Project no. 95
Bearing 335°	Length 65.8 m (216 ft.)	Dep. 19+41N	Dep.		Logged by B. Jano
Dip - Collar -70°	Core size NQ	Elev.	Elev.		Sheet 1 of 2

METRES From	METRES To	% Recovery	Graphic Log	DESCRIPTION OF UNITS	% Mineralization	Sample no.	METRES From	METRES To	METRES Length	ASSAYS				
0	6.5			OVERBURDEN										
6.5	30.0	100		FRESH SYENITE										
				Several friable, foliated zones:										
				12.4 m: Fol'n @ 35° to C.A.										
				16.5 m: Fol'n @ 40° to C.A.										
				27.4 m: Fol'n @ 40° to C.A.										
				23.9-24.5 m: Strong fol'n @ 35° to C.A., some lim'n/Bio'n.										
				25.9-26.7 m: Similar to above, very friable.										
				27.7-28.4 m: Well foliated, weak to mod. Bio'n, strong lim./kaol'n.										
30.0	31.5	90		KAOLINIZED SYENITE										
				Extensive to complete kaolinization, mafics have been destroyed, limonite is very abundant, especially along fractures. Colour band at 25° to C.A. separates upper brown kaol. from lower spotted, brown kaol.										
31.5	41.8	90		MIXED GREISEN/ALTERED SYENITE ZONE										
				31.5-38.3 m: First Greisen Zone. Tour-Qtz-Clay Greisen with 3 Tour. phases, crude banding @ 20-25° to C.A., moderate lim. + ars. stains and patchy clay alteration. Hanging wall is strongly foliated at the contact with Lim-Qtz bands interspersed with kaol-tour bands.										
				31.8-32.1 m: Strongly kaol-clay alt'd syenite.										
		100		32.1-35.1 m: Tour-Qtz Greisen, minor brx'n, lim-ars stains. Clay alt'n from 32.7-32.9 and 34.6-34.7 m. Rel. vn-brecciated from 34.7-35.1 m but still porous and kaolinized.										
		90		35.1-36.1 m: Grey to white clay zone, minor tour. remnants.										
		80-90		36.1-36.2 m: Broken up Tour. vein, heavy ars.										
		90		36.2-36.6 m: Kaol. + Clay, minor Tour.										
		95		36.6-36.7 m: Brecciated Tourmaline vein, minor Ars.										
		90		36.7-37.1 m: Talc with minor lim. patches.										
		95		37.1-38.3 m: 3 Tour., Tour-Qtz vein. Brx'd, Kaol'd, minor limonite.										



Legend

1 (a) Quartzite
(b) Coarse clastic
(c) Laminated fine grained clastic

2 (a) Hornblende - Biotite / Syeno - Monzonite
(b) Biotite Syenite
i) coarse grained, ii) fine grained
(c) Granodiorite

3 (a) Kaolinite ± Limonite ± Clay
(b) Clay / Talc
(c) Limonite
(d) Kaolinite ± Chalcedony ± Limonite ± Clay
(e) Tourmaline vein, i) coarse, ii) fine grained
(f) Clay + Tourmaline

Symbols

Contact

Fracture zone, vein breccia

Overburden

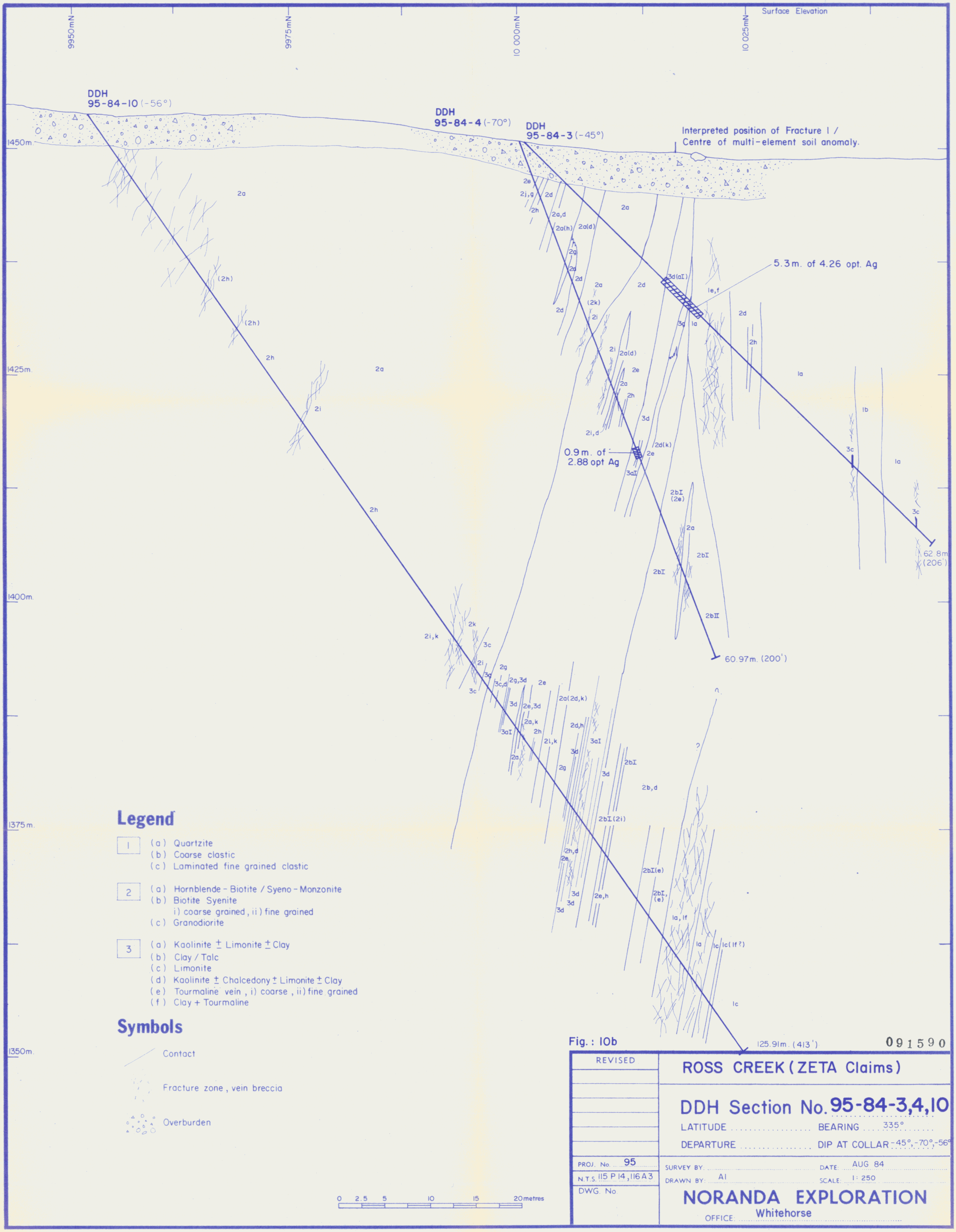
900m.

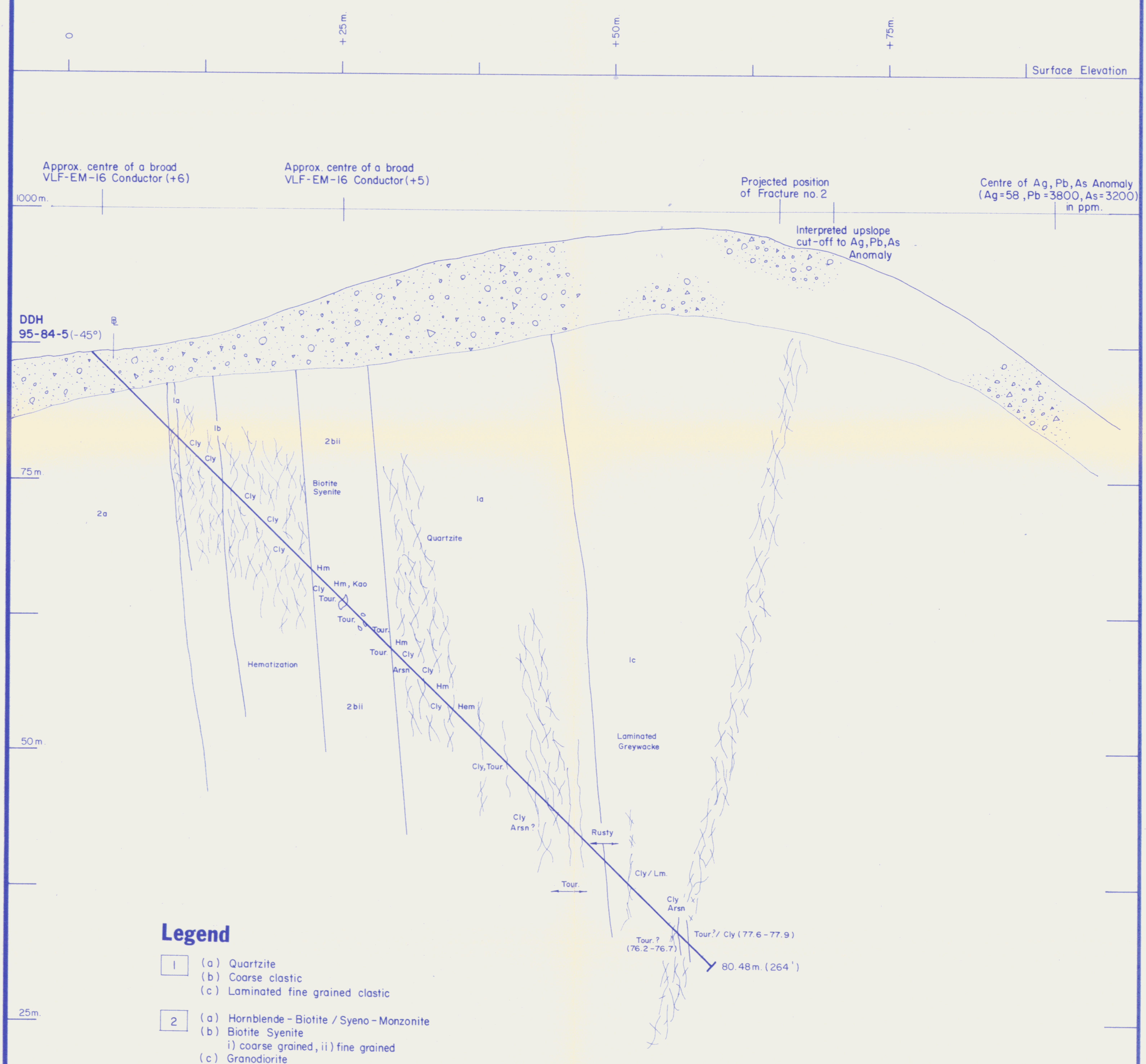
0 2.5 5 10 15 20 metres

Fig. : 10a

091590

REVISED	ROSS CREEK (ZETA Claims)	
	DDH Section No. 95-84-1,2,7	
	LATITUDE 1897E, 1897E, 1925E	BEARING 335°
	DEPARTURE 1942N, 1941N, 1918N	DIP AT COLLAR -45°, -70°, -55°
PROJ. No. 95	SURVEY BY	DATE: JUL 84
N.T.S. 115 P 14, 116 A 3	DRAWN BY: AI	SCALE: 1:250
DWG. No.	NORANDA EXPLORATION	
	OFFICE Whitehorse	


Surface Elevation
9950mN
9975mN
10 000mN
10 025mN
DDH
95-84-10 (-56°)
DDH
95-84-4 (-70°)
DDH
95-84-3 (-45°)
Interpreted position of Fracture I /
Centre of multi-element soil anomaly.
1450m
1425m
1400m
1375m
1350m
5.3 m. of 4.26 opt. Ag
0.9 m. of
2.88 opt Ag
62.8m
(206')
60.97m. (200')
125.91m. (413')
Legend
1 (a) Quartzite
(b) Coarse clastic
(c) Laminated fine grained clastic
2 (a) Hornblende - Biotite / Syeno - Monzonite
(b) Biotite Syenite
i) coarse grained, ii) fine grained
(c) Granodiorite
3 (a) Kaolinite ± Limonite ± Clay
(b) Clay / Talc
(c) Limonite
(d) Kaolinite ± Chalcedony ± Limonite ± Clay
(e) Tourmaline vein, i) coarse, ii) fine grained
(f) Clay + Tourmaline
Symbols
Contact
Fracture zone, vein breccia
Overburden
0 2.5 5 10 15 20 metres
Fig.: 10b
091590
REVISED
ROSS CREEK (ZETA Claims)
DDH Section No. 95-84-3,4,10
LATITUDE
BEARING 335°
DEPARTURE
DIP AT COLLAR -45°, -70°, -56°
PROJ. No. 95
N.T.S. 115 P 14, 116 A 3
DWG. No
SURVEY BY
DRAWN BY AI
DATE AUG 84
SCALE 1: 250
NORANDA EXPLORATION
OFFICE Whitehorse



Legend

1
(a) Quartzite
(b) Coarse clastic
(c) Laminated fine grained clastic

2
(a) Hornblende - Biotite / Syeno - Monzonite
(b) Biotite Syenite
i) coarse grained, ii) fine grained
(c) Granodiorite

3
(a) Kaolinite ± Limonite ± Clay
(b) Clay / Talc
(c) Limonite
(d) Kaolinite ± Chalcedony ± Limonite ± Clay
(e) Tourmaline vein, i) coarse, ii) fine grained
(f) Clay + Tourmaline

Symbols

Contact

Fracture zone, vein breccia

Overburden

0 2.5 5 10 15 20 metres

Fig. : 10c

091590

REVISED	ROSS CREEK (ZETA Claims)	
	DDH Section No. 95-84-5	
	LATITUDE 2079E	BEARING 335°
	DEPARTURE 1996N	DIP AT COLLAR -45°
PROJ. No. 95	SURVEY BY	DATE JUL 84
N.T.S. 115 P14, 116 A3	DRAWN BY: AI	SCALE 1 : 250
DWG. No.	NORANDA EXPLORATION	
	OFFICE Whitehorse	

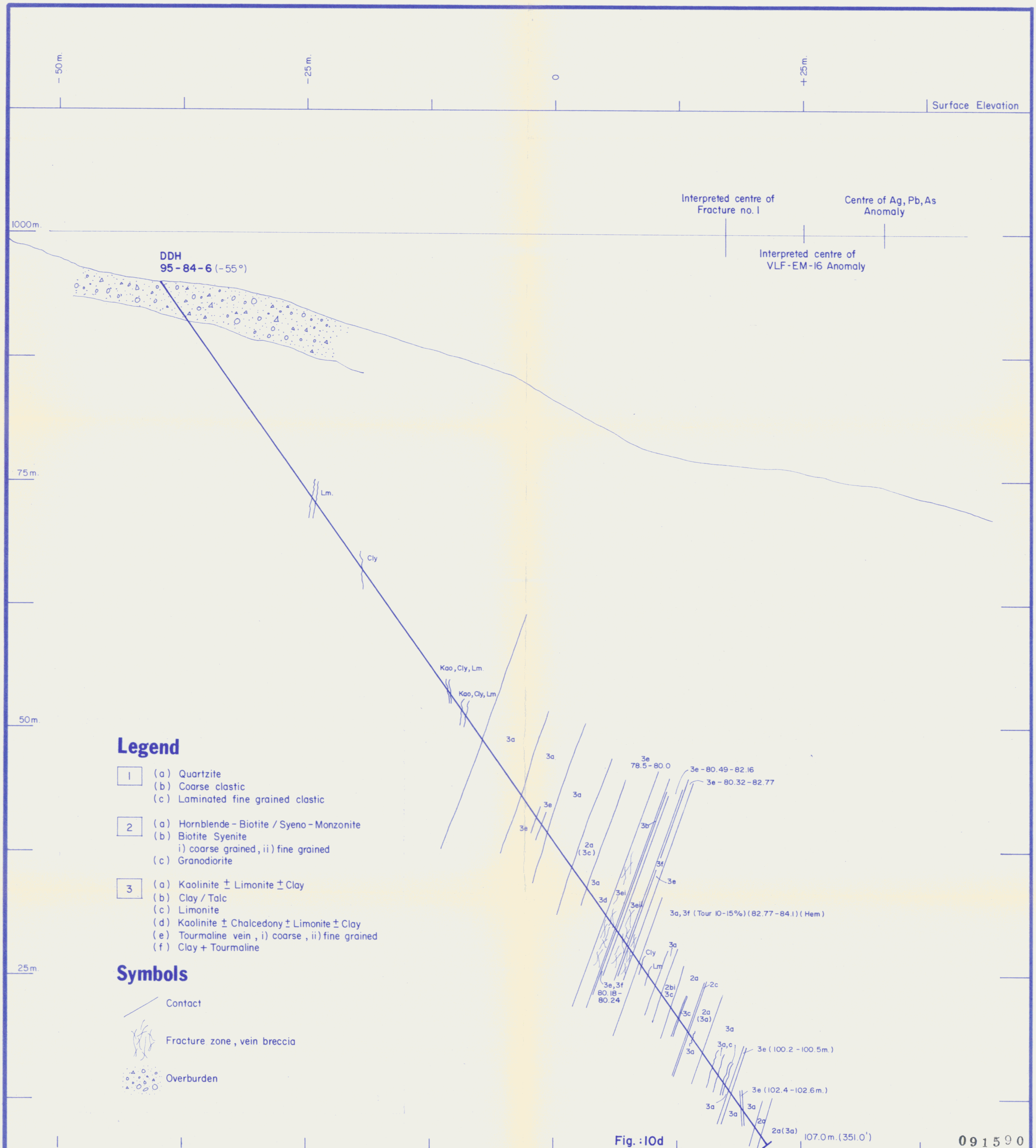


Fig.: 10d

091590

REVISED

ROSS CREEK (ZETA Claims)

DDH Section No. 95-84-6

LATITUDE 1891E BEARING 335°

DEPARTURE 1886N DIP AT COLLAR -55°

PROJ. No. 95

N.T.S. 115 P14, 116 A 3

DWG. No

SURVEY BY:

DRAWN BY: Al

DATE: JUL 84

SCALE 1: 250

NORANDA EXPLORATION

OFFICE Whitehorse

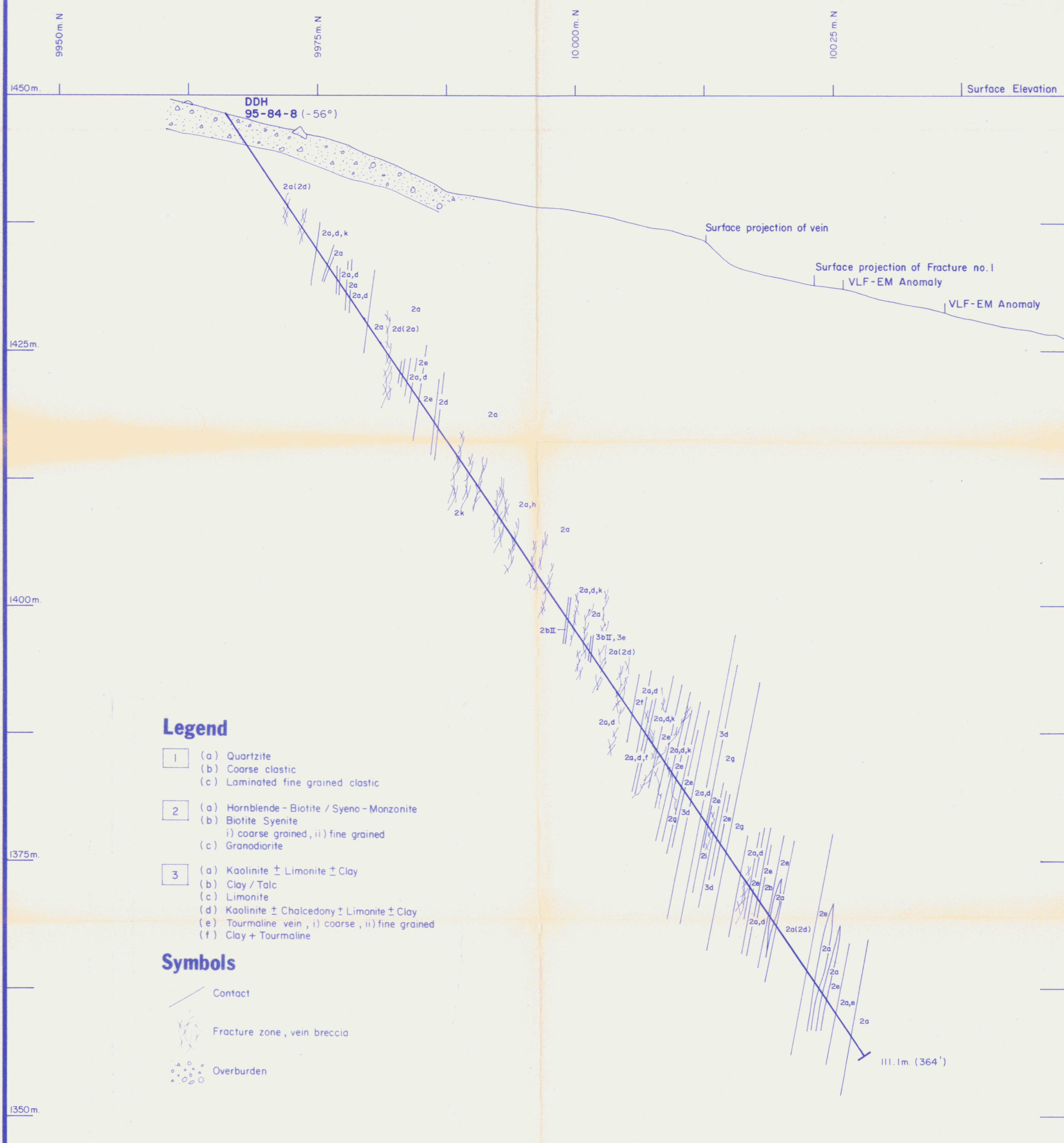
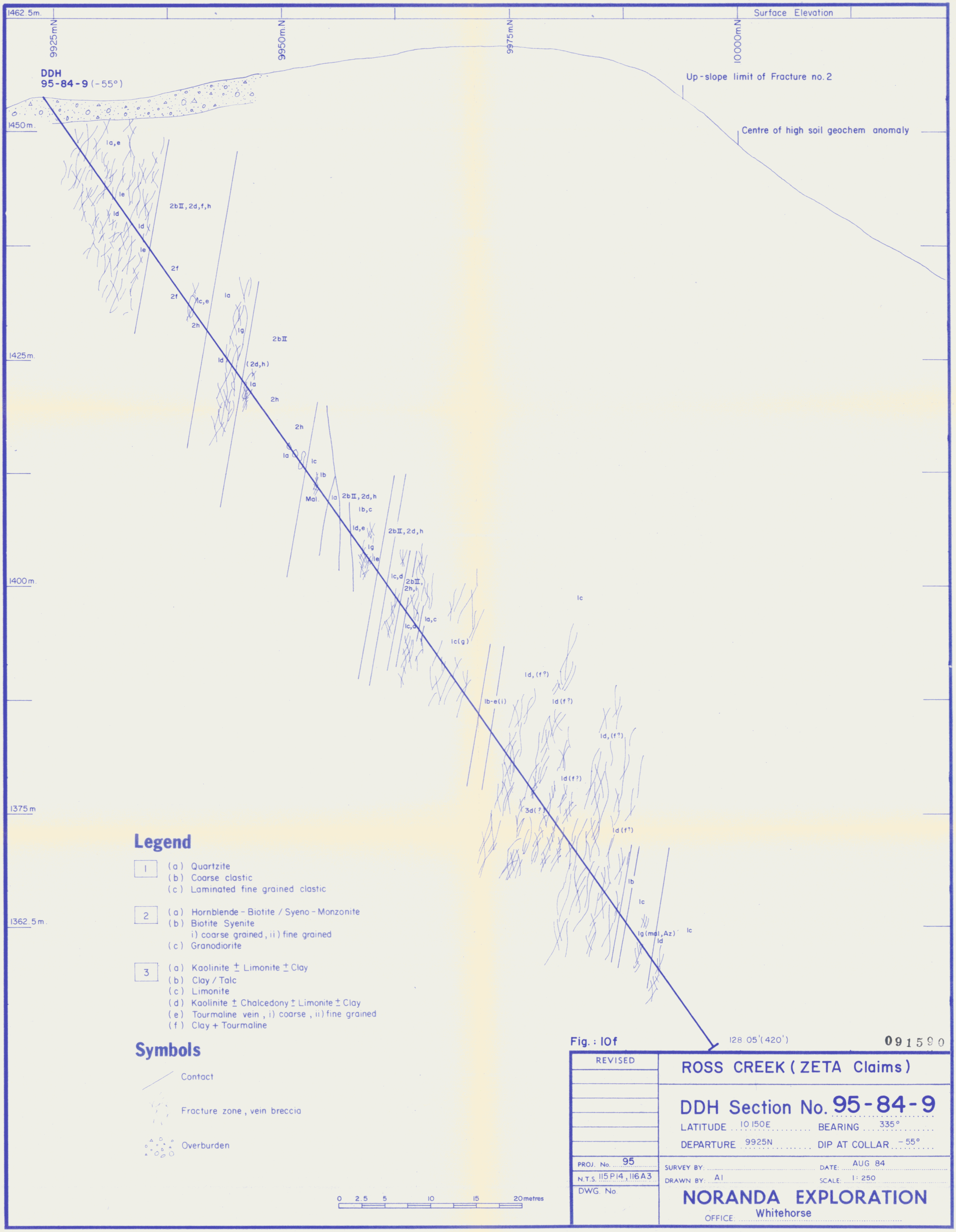


Fig.: 10e

091590

REVISED	ROSS CREEK (ZETA Claims)	
	DDH Section No. 95-84-8	
	LATITUDE 9900E	BEARING 335°
	DEPARTURE 9966N	DIP AT COLLAR -56°
PROJ. No. 95	SURVEY BY:	DATE: AUG 84
N.T.S. 115 P14, 116 A3	DRAWN BY: AI	SCALE: 1:250
DWG No.	NORANDA EXPLORATION	
	OFFICE: Whitehorse	


1462.5m.
Surface Elevation
9925mN
9950m.N
9975m.N
10000m.N
DDH
95-84-9 (-55°)
Up-slope limit of Fracture no.2
Centre of high soil geochem anomaly
1450m.
1425m.
1400m.
1375m
1362.5m.
Ia,e
Ie
Id
2bII, 2d,f,h
2f
Ic,e
Ia
2h
Ig
2bII
(2d,h)
Mal.
2bII, 2d,h
Ib,c
Id,e
2bII, 2d,h
Ic,d
2bII, 2h,h
Ia,c
Ic(g)
Ic
Id,(f?)
Ib-e(i)
Id(f?)
3d(?)
Ib
Ig (mal,Az)
Legend
1 (a) Quartzite
(b) Coarse clastic
(c) Laminated fine grained clastic
2 (a) Hornblende - Biotite / Syeno - Monzonite
(b) Biotite Syenite
i) coarse grained, ii) fine grained
(c) Granodiorite
3 (a) Kaolinite ± Limonite ± Clay
(b) Clay / Talc
(c) Limonite
(d) Kaolinite ± Chalcedony ± Limonite ± Clay
(e) Tourmaline vein, i) coarse, ii) fine grained
(f) Clay + Tourmaline
Symbols
Contact
Fracture zone, vein breccia
Overburden
0 2.5 5 10 15 20 metres
Fig.: 10f
128.05'(420')
091590
REVISED
ROSS CREEK (ZETA Claims)
DDH Section No. 95-84-9
LATITUDE 10150E
BEARING 335°
DEPARTURE 9925N
DIP AT COLLAR -55°
PROJ. No. 95
N.T.S. 115P14, 116A3
DWG. No
SURVEY BY:
DATE: AUG 84
DRAWN BY: AI
SCALE: 1:250
NORANDA EXPLORATION
OFFICE: Whitehorse

Legend

CRETACEOUS

4	LOST HORSE'S STOCK
a	Hornblende ± Biotite Syenite
b	K - Feldspar - Phyric Syenite
c	Hornblende - Diorite
d	Quartz + K - Feldspar Porphyry
e	Siliceous Biotite Porphyry
f	Hornblende ± Biotite Quartz Syenite
g	Hornblende ± Biotite K - Feldspar Phyric Granite
h	Tourmaline — patch Granite

ORDOVICIAN (or LATER ?)

3	CLASTIC FORMATION
a	Black shale with siliceous interbeds.
b	Quartzite, minor conglomerate and shale.
c	Green - grey quartzite with volcaniclastic component.
d	Light Clastic Unit 1 : Chert pebble conglomerate > quartzite > shale.
e	Black shale.
f	Light Clastic Unit 2 : Lithic pebbly quartzite > chert pebble conglomerate > beige quartzite.
g	Black Clastic Unit : Greywacke > chert pebble conglomerate, coarsed grained quartzite.
h	Buff sandstone / quartzite.
i	Black shale with interbedded quartzites, local barite, phosphatic shale.
j	Black shale with interbedded chert.
2	LIMESTONE
a	Thinly laminated dolomitic limestone.
b	Sheared graphitic schist.
c	Very fine grained dolomitic quartzite.

ORDOVICIAN (or EARLIER ?)

1	Quartzite, slate, phyllite, limestone.

Symbols

Ba horizon
Bedding, inclined
Foliation, strike & dip
Joints
Geological contact : defined, approx.
Calcite veins
Float
Outcrop
Fault / Fracture zone commonly with vein minerals

VEIN MINERALS / FAULT GOUGE

Qtz	Quartz
Kao	Kaolinite
Tour	Tourmaline
Lm	Limonite
Sulph	Sulphide (pyrite, arsenopyrite, stibnite)

0 400 800 1200 1600 2000 metres
Scale 1 : 20,000

Map 1 091590

SYENITE RANGE — OMEGA Claims ZETA Claims

Geology

REVISED
PROJ. No.
N.T.S. 115P14,15 - 116A2,3
DWG. No.
SURVEY BY BJ DATE SEP 84
DRAWN BY AI SCALE 1 : 20,000

NORANDA EXPLORATION
OFFICE Whitehorse


Telephone Ridge
Awesome Creek
Cyanide Ridge
Arsenic Ridge
Cyanide Creek
Arsenic Creek
Stonebedded Creek
Pinacle Ridge
ZETA 1-84 Claims
OMEGA 1-32 Claims
ZETA STRUCTURE
ZETA STRUCTURE 2
Syenite Creek
Black
S Y E N I T E
R A N G E
Legend
CRETACEOUS
4. Lost Horses Stock
a Hornblende ± Biotite, K-feldspar-phyric Syenite
Gradational Contact
b Biotite ± Hornblende, K-feldspar-phyric Syenite
c Hornblende ± Biotite, K-feldspar-phyric Quartz-Syenite
Gradational Contact
d Biotite ± Hornblende, K-feldspar-phyric Quartz-Syenite
Gradational Contact
e Hornblende ± Biotite + Tourmaline Granite
Gradational Contact to Intrusive Contact
f Tourmaline-patch (Orbicular?) Granite I) Coarse grained
II) Fine grained
Intrusive Contact
g Quartz + Feldspar Porphyry
h Siliceous Phlogopite ± Quartz Porphyry
i Orange-weathering Calcite Fault Gouge
Intrusive Contact
ORDOVICIAN (or later?)
3.
a Black shale with Siliceous Interbeds
b Quartzite, minor conglomerate and shale
c Green-grey Quartzite with a volcaniclastic component
d Light Clastic Unit 1: Chert pebble conglomerate > Quartzite > Shale
e Black Shale
f Light Clastic Unit 2: Lithic Pebble Quartzite > Chert Pebble Conglomerate > Beige Quartzite
g Black Clastic Unit: Greywacke > Chert Pebble Conglomerate and coarse grained Quartzite
h Buff Sandstone/Quartzite
i Interbedded Black Shale and minor Quartzite; local laminated Barite and Phosphatic Shale
j Black Carbonaceous Shale with interbedded Chert
2.
a Thinly Laminated Dolomitic Limestone
b Highly Foliated Graphitic Schist
c Very fine grained Dolomitic Quartzite
ORDOVICIAN (or earlier?)
1.
a Quartzite, Slate, Phyllite, Limestone
Symbols
Geological contact (Defined, Interpreted/Approximate, Projected from drill hole data)
Outcrop or Outcrop Area
Talus, Felsemeer
Bedding (Inclined)
Jointing (Inclined)
Foliation (Inclined
Lineation with plunge
Single vein with dip (Accompanied by vein description)
Parallel vein (Accompanied by vein description)
Fault, fracture or foliation zone (May be associated with a vein or vein system and shown with a vein description)
Vein Gangue
Tour - Tourmaline
Qtz - Quartz
Carb - Carbonate
Ct - Calcite
Fl - Flourite
Economic Minerals
Sulph - Sulphide
Gn - Galena
Ars - Arsenopyrite
Stb - Stibnite
Py - Pyrite
Alteration Minerals
Fe - Iron
Lm - Limonite
Hm - Hematite
Kao - Kaolinite
Bio - Biotite
Mn - Manganese
Cly - Clay
Tal - Talc
Chl - Chlorite
Rus - Rusty
Arsn - Arsenate
Minor vein components (< 5%) shown in parentheses.
Example of vein description
Tour-Qtz-(Fl)-30 cm
Lm-Kao, Py-(Ars-Stb)
(10%, 1%, < 1%)
This indicates a single, dipping (@45°) 30 cm Tourmaline > Quartz vein with minor Fluorite. The alteration assemblage includes Limonite and Kaolinite and Sulphide minerals are Pyrite (10%), Arsenopyrite (1%), and Stibnite (< 1%).
N
0 100 200 400 800 meters
Scale 1:10,000
Map 2
091590
REVISED
SYENITE RANGE – ZETA Claims & Lost Horses Stock
Geology
PROJ. No. 95
N.T.S. 115P14,15/116A2,3
DWG. No.
SURVEY BY: BJ
DRAWN BY: AI
DATE: OCT 84
SCALE: 1:10,000
NORANDA EXPLORATION
OFFICE: Whitehorse

Legend

1. a) Quartzite (hornfelsed, may be very altered (potassic metasomatism) and rusty (maximum 3% Py + Ars. comb.)
   b) Coarse clastic (pebbly quartzite or pebbly greywacke)
   c) Laminated greywacke to sandy siltstone
   d) Light grey chert
   e) Black, carbonaceous chert
   f) Black chert with interbedded grey-black (carbonaceous) shale
   g) Laminated sandy siltstone to siliceous siltstone with minor interbedded chert pebble conglomerate
   h) Laminated barite
   i) Clastic dyke

2. a) Hornblende + Biotite, K-feldspar-phyric Syenite
   b) Biotite Syenite
      I) Coarse grained**
      II) Medium to fine grained**
      **May not be co-genetic equivalents
   c) Granodiorite
   d) Siliceous mica-porphyry
   e) Orange weathering, calcite fault gouge

3. a) 3 - Tourmaline, tourmaline + quartz ± sulphide ± clay ± limonite vein
   b) 1 - Tourmaline, tourmaline ± quartz vein

Symbols

- Outcrop
- Slickenside with plunge
- Bedding (Vertical, Inclined, Horizontal)
- Joints (Vertical, Inclined, Horizontal)
- Foliation (Vertical, Inclined, Horizontal)
- Igneous lamination (Vertical, Inclined, Horizontal)
- Trench with date of excavation and trench number eg. 82-3
- Geological contact (Defined-Interpreted)
- Drainage with flow direction
- Area of altered talus
- Mineralized talus blocks (Tourmaline vein)
- Mineralized fault breccia blocks
- Fault or fracture zone
- Float

ALTERATION

Tb - very fine grained and/or thin tourmaline blasts or veinlettes
b - black tourmaline

Kaol. - Kaolinite ± limonite ± hematite alteration

Bi, Bm, Bs - Bleached host rock; (often very gritty and sandy)
i - intense
m - moderate
s - slight

Mv, Mh - fine to medium grained micas;
Mv - tiny phlogopite or muscovite fracture fillings and veins
Mh - very fine grained biotite in hornfelsed quartzite

S - Sulphides - probably pyrite and arsenopyrite; less than 3 to 5% combined

R - Rusty

Arsn - Arsenate stain - green, green-yellow

Q.V. - Quartz vein

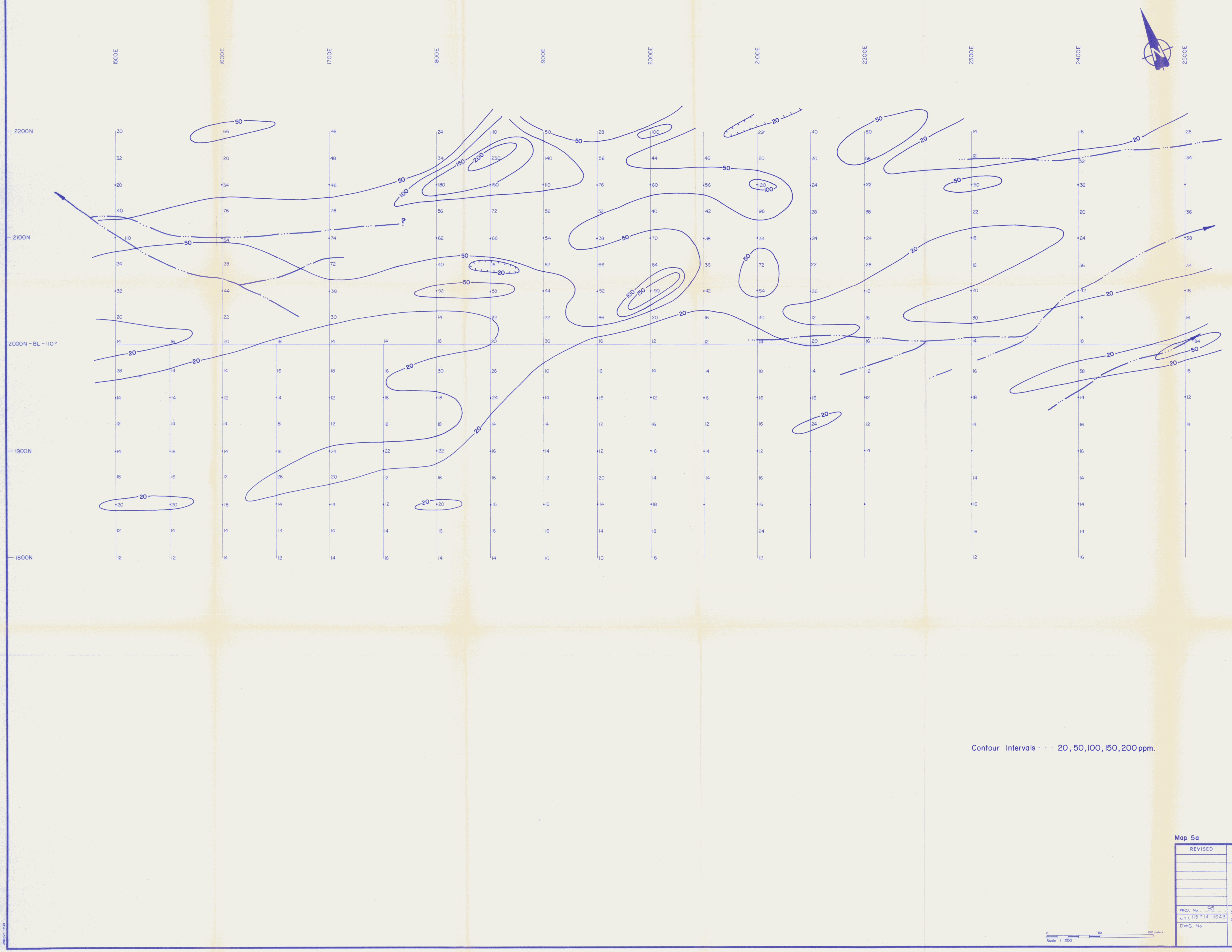
Scale 1:1250 — 0 — 50 — 100 meters

Map 3

091590

REVISED	ROSS CREEK (ZETA Claims)
	Geology
PROJ. No. 95	SURVEY BY: BJ — DATE: SEP 84
N.T.S. 115 P 14 - 116 A 3	DRAWN BY: AI — SCALE: 1:1250
DWG. No. MAP 3	NORANDA EXPLORATION — OFFICE: Whitehorse

Telephone Ridge
AWESOME CREEK
CYANIDE CREEK
OLD LACE CREEK
ARSENIC CREEK
STONEHEDGE CREEK
Pinacle Ridge
Noranda ZETA 1-40 Claims
S Y E N I T E
P 44288 000N
44289
44290
44291
44292
44293 050N
44294
44295
44296
44297
44298 100N
44299
44300
44251 130N
R 44255 As 110
S 44284 W 44285
R 44364 20831A 20831B
R21650
S 44261 W44262
S 44263 W 44264
S 44265 W44266
R 21651 21652 21653 21654
R 35366
R 20830
P 21655 Cu150, Pb66 21656 21657 21658 21659
R 35363 35364
S 37479 As200
S 37478 As180
R 20835 20834 20833 20832 Ag 9.4 As 330
P 49691 - 49700
R 21660 - 21675
S 44338 W 44339
S 44334 As140 W 44335
R 37500
R 44397A 44397B
R 21627 21626
R 44398 44399 A 44399 B 44399 C 44400
P 49760 49761 49762
P 49766 49767 49768 49769
R 49764 49765
P 49770 49771 49772
R 49774
R 35361 37492 37493
P 35351 35352 35353 A, B, C 35354 35355
P 35360 35359 As130 35358 35357 35356 As120
R 35360
P 40983
P 40984
R 37401A 37401B Ag 0.6, As440
S 37402
S 37403 W37487
S 37404
R 49759 21647A 21647B 21648 21649 49753 49757 49758
P 49751
P 49755
R 21646 21645 21644
R 21643
P 21638 21639 21640 21641 21642
P 21633 21634 21635 21636 21637
P 21628 21629 21630 21631 21632
S 44403 W 44404
S 44401 W 44402
P 35367
S 35373 W 35374
P 35368 35369 35370 35371
S 37407 As100 W37490
S 44405 W 44406
P 44411 As140 44410 44409 As100 44408 As 260 44407
S 37406 As130 W37489
S 37408 W37491
S 37405 W37488
P 37415 Zn180 37416 Zn170 37417 Zn240
R 37409 Sn 5600
P 37412 Sb88 37413 37414
R 37410 37411
S 44276 W 44277
S 44278 W 44279
4200
3700
3900
4000
4600
4800
5700
4300
98
97
96
95
Map 4
REVISED
SYENITE RANGE
ZETA Claims & Lost Horses Stock
GEOCHEMICAL RECON PROGRAM - 1984
091590
PROJ. No. 95
N.T.S. 115P14,15/116A2,3
DWG. No.
SURVEY BY: BJ & CREW
DRAWN BY: SJM
DATE: OCT 84
SCALE: 1:10000
NORANDA EXPLORATION
OFFICE WHITEHORSE



Map 5a

091590

ROSS CREEK (ZETA Claims)

Soil Geochem Results
Cu (ppm)

REVISED

PROJ. No. 95

N.T.S. 115 P 14 - 116 A 3

DWG. No

SURVEY BY: BJ, RM, SM, SM

DATE: OCT 84

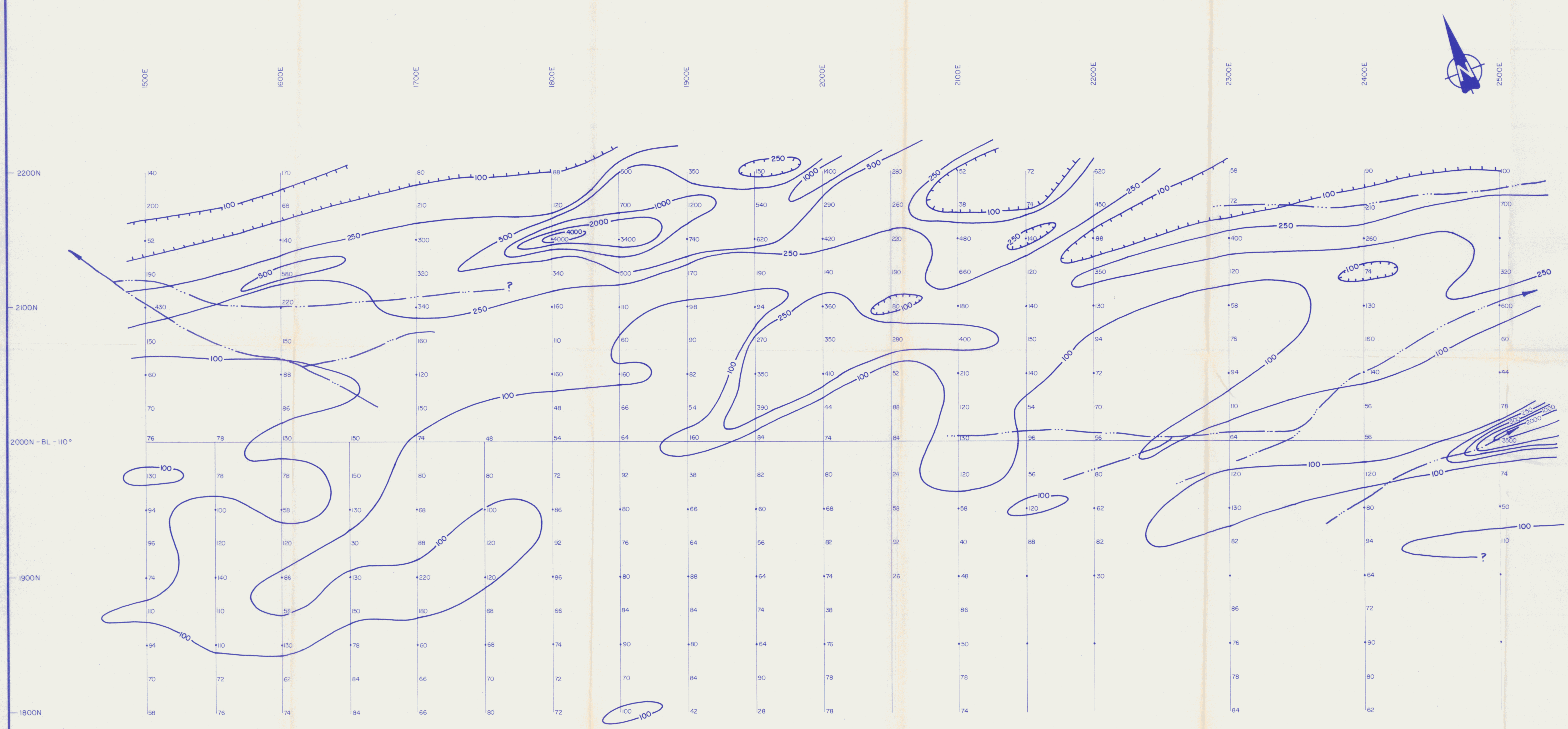
DRAWN BY: AI

SCALE: 1:1250

NORANDA EXPLORATION

OFFICE: Whitehorse

1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2200N
2100N
2000N - BL - 110°
1900N
1800N
Contour Intervals · · · 100,250,500,1000,2000,3000 ppm
Map 5b
091590
REVISED
ROSS CREEK (ZETA Claims)
Soil Geochem Results
Pb (ppm)
PROJ. No. 95
N.T.S. 115 P 14 - 116A 3
DWG. No.
SURVEY BY: BJ, RM, SM, SM
DRAWN BY: AI
DATE: OCT 84
SCALE: 1:1250
NORANDA EXPLORATION
OFFICE: Whitehorse
Scale 1:1250



Contour Intervals · · · 100, 250, 500, 1000, 2000, 4000 ppm.

0 50 100 meters
Scale 1:1250

Map 5c

091590

REVISED	ROSS CREEK (ZETA Claims)
	Soil Geochem Results Zn (ppm)
PROJ. No. 95	SURVEY BY: BJ, RM, SM, SM DATE: OCT 84
N.T.S. 115 P 14 - 116 A 3	DRAWN BY: AI SCALE: 1:1250
DWG. No.	**NORANDA EXPLORATION** OFFICE: Whitehorse


1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2200N
2100N
2000N - BL - 110°
1900N
1800N
Contour Intervals · · · 1.0, 2.0, 5.0, 10.0 ppm.
Scale 1:1250
100 meters
Map 5d
091590
REVISED
ROSS CREEK (ZETA Claims)
Soil Geochem Results
Ag (ppm)
PROJ. No. 95
N.T.S. 115 P 14 - 116 A 3
DWG. No.
SURVEY BY: BJ, RM, SM, SM
DATE: OCT 84
DRAWN BY: AI
SCALE: 1:1250
NORANDA EXPLORATION
OFFICE: Whitehorse


1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2200N
2100N
2000N - BL - 110°
1900N
1800N
Contour Intervals · · · · 100, 200, 500, 1000, 2000, 3000 ppm.
Map 5e
091590
REVISED
ROSS CREEK (ZETA Claims)
Soil Geochem Results
As (ppm)
PROJ. No. 95
N.T.S. 115P 14 - 116A 3
DWG. No.
SURVEY BY: BJ, RM, SM, SM
DRAWN BY: AI
DATE: OCT 84
SCALE: 1:1250
NORANDA EXPLORATION
OFFICE: Whitehorse


1500E
1600E
1700E
1800E
1900E
2000E
2100E
2200E
2300E
2400E
2500E
2200N
2100N
2000N - BL - 110°
1900N
1800N
Contour Intervals · · · 1000, 2000, 3000, >10,000 ppm.
Map 5f
091590
REVISED
ROSS CREEK (ZETA Claims)
Soil Geochem Results
Ba (ppm)
PROJ. No. 95
N.T.S. 115P14-116A3
DWG. No.
SURVEY BY: BJ
DRAWN BY: AI
DATE: SEP 84
SCALE: 1:1250
NORANDA EXPLORATION
OFFICE: Whitehorse
Scale 1:1250

NOTE : Because of large negative values in the west half of the map, profiles are displaced, often one line eastwards.

Legend

Instrument ················ GEONIC EM 16

Operators ················ SAM

Date surveyed ··········· JUN-JUL 84

Profile scale ············· 1cm. = 5 %

Transmitting station ······ LUALUALEI, HAWAII

Frequency ················ 23.4 KHz.

················ CREEK / STREAM

Scale 1 : 1250 — 0 – 50 – 100 meters

Map 6a

091590

REVISED	ROSS CREEK (ZETA Claims)
	VLF-EM Survey (RAW DATA PROFILE)
PROJ. No. 95	SURVEY BY: SAM — DATE: OCT 84
N.T.S. 115 P 14 - 116 A 3	DRAWN BY: AI — SCALE: 1 : 1250
DWG. No.	**NORANDA EXPLORATION** OFFICE: Whitehorse

Structural Interpretation

- Interpreted fault or fracture zones showing relative movement of fault blocks if any movement is interpreted.
- Fault or fracture zone (defined, interpreted)
- Lithological marker
- A,B,C, — VLF-EM Anomalies
- 1,2,3, — Interpreted Structures / Faults / Fracture zone

Legend

Instrument	GEONICS EM 16
Operators	SAM
Date surveyed	JUN-JUL 84
Readings	DIP ANGLE IN DEGREES
Results	FRASER FILTERED
Contour values	0, 5, 10, 15, 20, 25, 30 °
Transmitting station	LUALUALEI, HAWAII
Frequency	23.4 KHz.
	CREEK / STREAM

Map 6b

091590

ROSS CREEK (ZETA Claims)

VLF-EM Survey
(FRASER FILTERED)

REVISED

PROJ. No. 95
N.T.S. 115P14-116A3
DWG. No.

SURVEY BY: SAM
DRAWN BY: AI
DATE: OCT 84
SCALE: 1:1250

Scale 1:1250

NORANDA EXPLORATION
OFFICE: Whitehorse