

COMINCO LTD.

EXPLORATION
NTS: 94F-7

WESTERN DISTRICT

ASSESSMENT REPORT
GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE
DEL GROUP, AKIE RIVER AREA
OMINECA MINING DIVISION
BRITISH COLUMBIA

LATITUDE: 57°20'N; LONGITUDE: 125°00'W

PERIOD OF FIELD WORK: JUNE 27TH TO AUGUST 25TH, 1981



OCTOBER 1981

K.R. PRIDE

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LIST OF CLAIMS

DEL GROUP

<u>CLAIM NO.</u>	<u>RECORD NO.</u>	<u>NO. OF UNITS</u>	<u>RECORDING DATE</u>
DEL- 1	3317	20	Oct. 10, 1980
DEL- 2	3318	20	Oct. 10, 1980
DEL- 3	3319	20	Oct. 10, 1980
DEL- 4	3320	20	Oct. 10, 1980
DEL- 5	3321	20	Oct. 10, 1980
DEL- 6	3322	20	Oct. 10, 1980
DEL- 7	3323	20	Oct. 10, 1980
DEL- 8	3324	20	Oct. 10, 1980
DEL- 9	3695	12	April 2, 1981
DEL-10	3696	12	April 2, 1981

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT
14 OCTOBER 1981

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

DEL GROUP

AKIE RIVER AREA

OMINECA MINING DIVISION

BRITISH COLUMBIA

INTRODUCTION

The Del Group, totalling 184 units, was staked to cover a section of Ordovician and Devonian clastic stratigraphy, a barite-kill zone and a large transported gossan located on tributaries of Del Creek and the Akie River.

Cominco Ltd. performed preliminary grid soil sampling, stream silt sampling, line cutting and geological mapping during the period June 27 to August 25, 1981. Total expenditures on this claim group are estimated to be \$35,000.

Preliminary geological mapping at a scale of 1:5,000 was conducted over the central and eastern portion of the claim group. A 7 kilometre north-west trending cut-baseline was installed to provide control for geological mapping and chain and compass grid-soil sampling. Approximately 1100 soils were collected at 25 metre intervals along grid lines 100 metres apart.

LOCATION AND ACCESS

The Del claim group is located between the Akie River and Del Creek, 55 kilometres west of Sikanni Chief Lake on the Fort Ware Map Sheet NTS: 94F. The centre of the claim group is located at latitude 57°20'N and longitude 125°00'W.

Field work on the Del Group was conducted using a Jet Ranger helicopter based at Sikanni Chief Lake, 55 kilometres to the east. Logistical support was provided by float equipped aircraft based at Mackenzie, 233 kilometres to the south.

2.

REGIONAL GEOLOGY

A northwest trending belt of Paleozoic basinal stratigraphy has been outlined by regional mapping programs conducted by the Geological Survey of Canada. This belt is located within the Rocky Mountain thrust and fold belt and is centered approximately 40 kilometres east of the Rocky Mountain Trench. The Paleozoic shales are continuous from the Ospika River, northwesterly through Kwadacha Wilderness Park, Gataga Lakes, and Driftpile Creek to Watson Lake a distance of 400 kilometres. This belt is informally called the Kechika Trough which may represent a southeasterly extension of the Selwyn Basin.

GEOLOGY

Geological mapping at a scale of 1:5,000 has outlined a northwest trending thrust panel of Cambrian to Devonian stratigraphy containing an overturned fault-bounded anticline of Devonian Gunsteel shales.

Kechika Formation (Unit €OK)

The Kechika Formation ranges in age from latest Cambrian to Early Ordovician and occurs along the western boundary of the claim group where it overthrusts Silurian and Devonian rocks. The Kechika Formation consist of at least 500 meters of cream to light grey-weathering, wavy banded, nodular, calcareous mudstone and phyllite.

Road River Formation

The Road River Formation, ranging in age from Early Ordovician to Early Silurian, occurs along the eastern portion of the property where it forms the base of a thrust panel within the Silurian siltstone unit. This Formation can be subdivided into four members.

The basal member, Unit O_{SH}, of undetermined thickness, consists of interbedded black carbonaceous shale, siliceous mudstone, and minor black limestone which contain Early to Middle Ordovician graptolites.

The second member, Unit O_{LS}, having a very limited exposure in the north-central portion of the claim group, consists of grey to black weathering fine-grained, black limestone and black calcareous mudstone. No fossils were observed in the unit, but it underlies rocks containing Early Silurian graptolites.

The third member, Unit S_{SH}, having a very limited exposure in the north central area of the claim group, is approximately 50 metres thick and consists of black to blue-grey weathering, black, laminated, siliceous shale and chert. The graptolite *Monograptus spiralis* has been indentified indicating an age of Early Silurian.

TABLE 1

TABLE OF GEOLOGICAL FORMATIONS

	<u>AGE</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
	?	dy	Orange weathering, felsic dykes.
GUNSTEEL FORMATION	DEVONIAN	D _{SH}	Black to blue grey weathering, laminated siliceous shale and mudstone.
		D _{BA}	Rusty weathering, light grey, nodular, laminated and massive barite.
		D _{LS}	Light grey weathering, medium to thickly bedded limestone and bioclastic limestone debris flows. (2 hole-crinoids, thamnopora, bulbous, stromatoporoids, solitary corals).
		D _{DR}	Orange to brown weathering, creamy-white, vuggy dolomite reef.
ROAD RIVER FORMATION	SILURIAN	S _{SL}	Orange - buff weathering, grey siltstone, minor quartzite and calcarenite (bioturbated).
		S _{LS}	Light grey weathering, grey, thin to medium-bedded, silty limestone (1 hole-crinoids)
		S _{SH}	Black to blue grey weathering, black, laminated, siliceous shale and mudstone, (Monograptus bohemicus)
KECHIKA FORMATION	ORDOVICIAN	O _{LS}	Black to grey weathering, black, fine grained, thin-bedded limestone, and minor calcareous mudstone.
		O _{SH}	Black-blue weathering, black, siliceous, laminated shale with minor beds of black, silty limestone (Climacograptus, Orthograptus)
	CAMBRO-ORDOVICIAN	EO _K	Light grey weathering, grey, nodular, wavy banded limestone and calcareous phyllite.

3.

The fourth member, Unit S_{LS} , is exposed along the central portion of the property and ranges in thickness from 0.5 metres to 10 metres. The rock unit is a massive to medium bedded, grey weathering, grey limestone which contains small, single-holed crinoid stems and locally, fine silt laminations and cross-laminations.

Silurian Siltstone (Unit S_{SL})

The Road River Formation is unconformably overlain by up to 500 metres of greyish-orange and yellowish-orange weathering rhythmically bedded dolomite with variable proportions of siltstone, shale and quartz-sandstone. Graptolites from the shale portions of the unit indicate an age of Middle to Late Silurian.

Early to Middle Devonian (Unit D_{DR} and D_{LS})

An Early to Middle Devonian dolomite reef, unit D_{DR} , is exposed in the west central area of the property where it unconformably overlies Unit S_{SL} . The dolomite is characteristically orange to buff weathering, resistant, silty-laminated at the base and vuggy, cream-white at the top. This unit has a variable thickness up to 15 metres.

The Devonian dolomite reef grades into a 10 metre thick section of limestone and bioclastic limestone debris flows, unit D_{LS} . The rocks are grey weathering, thickly bedded to massive and represent a carbonate reef-flank assemblage.

Upper Devonian Gunsteel Formation (Unit D_{SH})

The Middle Devonian carbonate sequence is unconformably overlain by Devonian shale, unit D_{SH} , or Gunsteel Formation which hosts the known barite-lead-zinc occurrences in the area. This unit is exposed in the central portion of the claim group and reflects the east and west limbs of a northwest trending anticline which is overturned to the east. The unit consists of black to blue-grey weathering silty shale, siliceous shale and chert and rusty weathering nodular to massive grey barite.

Devonian Barite (Unit D_{BA})

Unit D_{SH} or the Gunsteel Formation equivalent contains interbeds up to 2.0 metres thick of nodular to massive barite which crops out in the western portion of the claim group on line 35N approximately 1300 metres west of the baseline. Float blocks of light cream to buff-grey barite were located on the baseline at stations 37N and 38N, approximately 100 to 200 metres north of the barite kill zone which is located 30 metres west of the baseline at station 35+25N. The large gossan which is geochemically anomalous in Pb-Zn-Ba is located 25 metres west of the baseline between stations 40+50N and 41+50 N. No lead or zinc sulphide mineralization has been observed to date.

4.

Intrusive Dykes (Unit dy)

Felsic dykes occur in the western and central portions of the claim group and cross-cut Cambrian to Devonian stratigraphy. The dykes are typically orange weathering, resistant, fine grained and contain up to 5% finely disseminated pyrite.

GEOCHEMISTRY

During the period June 27 to August 25, 1981 approximately 1100 soil and silt samples were collected on the Del Group as a preliminary search for stratiform barite-lead-zinc mineralization. Ketz Enterprises of Ross River, Yukon, were contracted to cut a 7 kilometre northwest trending baseline which provided control for a chain and compass grid soil survey. Soil samples were collected at 25 metre intervals along lines spaced 100 metres apart.

Soil samples were collected from the "B" horizon using mattocks. All samples were packaged in kraft sample bags and sent to the Cominco Laboratory at 1486 East Pender Street, Vancouver, B.C. The soil samples were dried, sieved to -80 mesh, weighed to half a gram, digested in perchloric acid and analysed by atomic absorption for lead and zinc. Soil samples that required barium analyses were subjected to x-ray fluorescence. All sample pulps from the Del Group are stored at the Cominco Laboratory in Vancouver.

Thresholds for lead, zinc and barium were calculated by cumulative frequency plots to distinguish the response of mineralization from the response of background values and can be seen in Table 2.

The resulting calculated thresholds outline the anomalous levels for the Gunsteel Formation. The barium and lead responses appear to be the best indicator of the baritic shale lithology of the Gunsteel Formation. Results of the soil survey may be noted on the accompanying 1:5,000 scale maps, Plates 4, 5 and 6 for lead, zinc and barium respectively. The contour interval for each element was calculated graphically from cumulative frequency plots.

5.

TABLE 2

GEOCHEMICAL THRESHOLDS (ppm)

Sample Type	Possibly anomalous			Anomalous		
	Pb	Zn	Ba	Pb	Zn	Ba
soil	60	1000	3000	100	1500	3000
silt	50	1000	3000	70	1500	4000

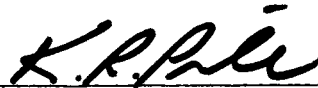
CONCLUSIONS

Preliminary 1:5,000 scale geological mapping on the property has outlined the Gunsteel Formation, which is the host for stratiform barite-sulphide occurrences at the Driftpile Creek, Cirque and Elf properties.

Grid soil sampling has outlined coincident lead, zinc and barium anomalies which are coincident with the baritic shale lithology of the Gunsteel Formation.

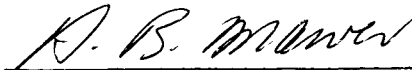
Detailed geological mapping, careful prospecting and cat trenching will be required to determine if the geochemical anomalies are derived from a sulphide source.

Report by:



K.R. Pride
Geologist

Endorsed by:



A.B. Mawer
Senior Geologist

Approved for
Release by:



G. Harden
Manager, Exploration
Western District

KRP/pm
15 October 1981

Distribution:

REFERENCES

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- Cecile, M.P. and Norford, B.S. (1979): Basin to Platform Transition, Lower Paleozoic Strata of Ware and Trutch Map-Areas, Northeastern British Columbia, in Current Research, Part A, Geol. Surv., Canada, Paper 79-1A, Report 36.
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APPENDIX "A"

STATEMENT OF EXPENDITURES

DEL CLAIM GROUP

JUNE 27TH TO AUGUST 25TH, 1981

SALARIES

K.R. Pride	- 4 days @ \$180/day	\$ 720.00
A.L. MacGregor	- 2 days @ \$170/day	340.00
D. Kuran	- 6 days @ \$135/day	810.00
J. Weir	- 2 days @ \$130/day	260.00
D. Vanbeselaere	- 6 days @ \$ 90/day	540.00
F. Jay	- 6 days @ \$ 85/day	510.00
G. Ross	- 6 days @ \$ 80/day	480.00
S. Semnutin	- 6 days @ \$ 80/day	480.00
		<u>\$ 4,140.00</u> ✓

GEOCHEMICAL ANALYSIS

Soils and Silt samples	- 1100 @ \$6.75/sample	\$ 7,425.00
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LINECUTTING

Ketza Enterprises	- 7 km @ \$350/km	\$ 2,450.00
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FIELD EQUIPMENT AND SUPPLIES

\$ 2,000.00 ✓

CAMP MAINTENANCE

38 man days	@ \$30/man day	\$ 1,140.00
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TRANSPORTATION

Helicopter	- 32 hr. @ \$365/hr.	\$11,680.00
Helicopter fuel	- 3133 liter @ \$0.80/liter	2,500.00
Fixed Wing	- 1040 km @ \$1.22/km	1,274.00

15454⁰⁰ ~~\$14,918.00~~

Total direct field costs

\$31,615.00

32604.00

REPORT WRITING, RESEARCH, DRAFTING

K.R. Pride	- 7 days @ \$180/day	\$ 1,260.00
D. Kuran	- 5 days @ \$135/day	675.00
P. McFeely	- 3 days @ \$150/day	450.00

\$ 2,385.00

TOTAL COST

\$35,000.00

(34,994⁰⁰)

TK

APPENDIX "B"

IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL

PROGRAM PERFORMED ON THE DEL CLAIM GROUP

AKIE RIVER AREA

OMINECA MINING DIVISION

BRITISH COLUMBIA

A F F I D A V I T

I, K.R. PRIDE OF THE MUNICIPALITY OF BURNABY, IN THE PROVINCE OF BRITISH COLUMBIA, HEREBY DECLARE:-

- (1) THAT I am employed as a geologist by Cominco Ltd., and, as such, have a personal knowledge of the facts to which I hereinafter depose;
- (2) THAT annexed hereto and marked as APPENDIX "A" to this report is a true copy of expenditures incurred in connection with a geological and geochemical program on the Del Claim Group;
- (3) THAT the said expenditures were incurred between the 27th day of June and the 25th day of August, 1981 for the purpose of performing geological and geochemical exploration on the Del Claim Group.

Signed: _____

K.R. Pride
K.R. Pride
Geologist

Dated this 23 day of October, 1981
at Vancouver, British Columbia

APPENDIX "C"

STATEMENT OF QUALIFICATIONS

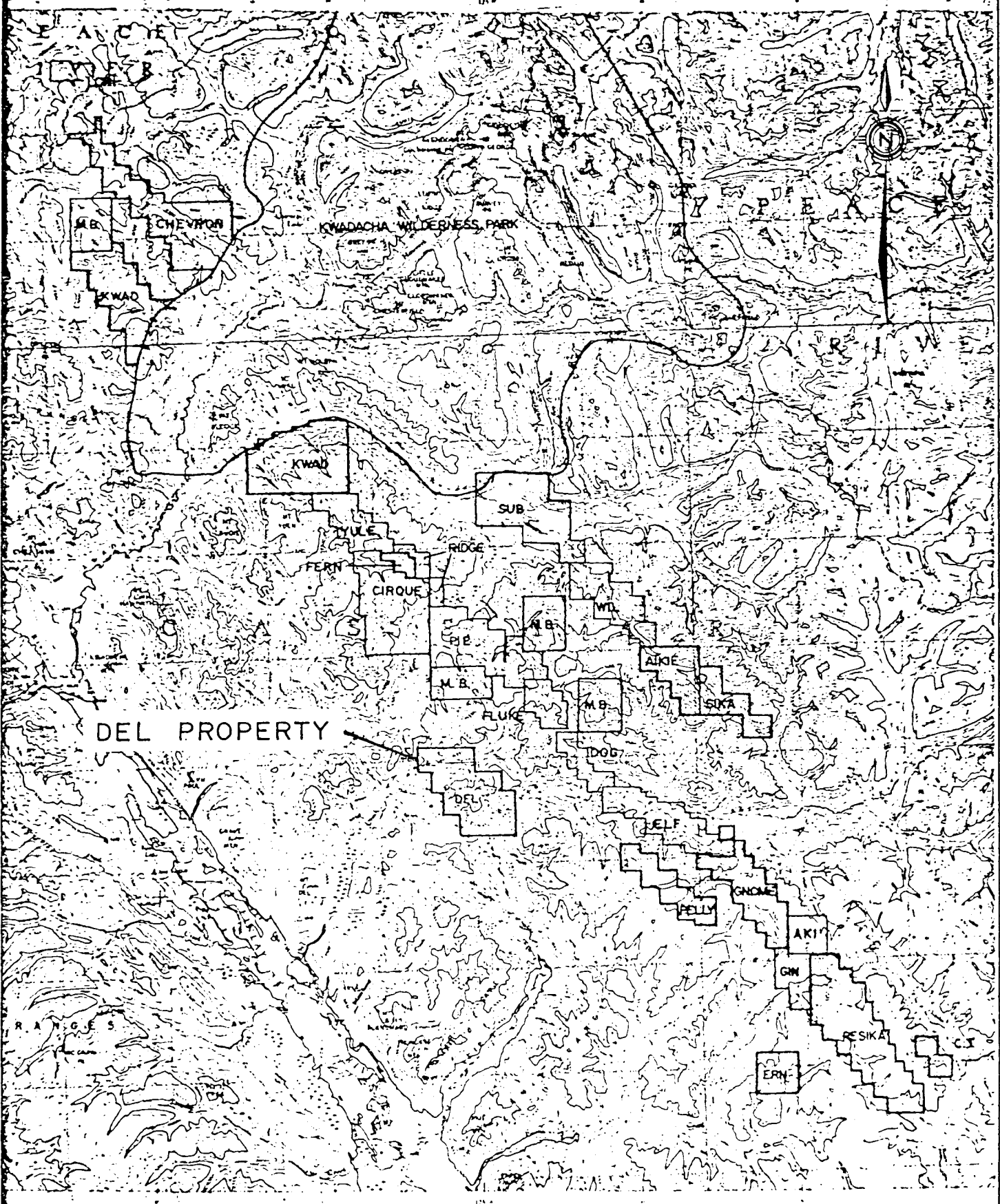
I, K.R. PRIDE, GEOLOGIST, WITH BUSINESS ADDRESS AT 700-409 GRANVILLE STREET, VANCOUVER, BRITISH COLUMBIA AND RESIDENTIAL ADDRESS AT 3770 FIR STREET, BURNABY, BRITISH COLUMBIA, HEREBY CERTIFY THAT:-

- (1) THAT I am a graduate in Geological Sciences with a B.Sc. (Hons.) in 1973 from the University of British Columbia.
- (2) THAT from 1973 to the present I have been employed by Cominco Ltd. as a geologist and have been actively engaged in mineral exploration in British Columbia, Yukon, Northwest Territories, Mexico and Saudi Arabia.
- (3) THAT I personally participated in the field work on the Del Claim Group and have interpreted all the data resulting from this work.

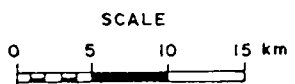
Signed: _____

K.R. Pride
K.R. Pride
Geologist

Dated this 23 day of October, 1981
at Vancouver, British Columbia.



WARE
BRITISH COLUMBIA



9672

KAB



94 F/7

Drawn by:		Traced by:	
Revised by	Date	Revised by	Date

LOCATION MAP
DEL PROPERTY

Scale: 1:500,000 Date: October 14, 1981 Plate 1



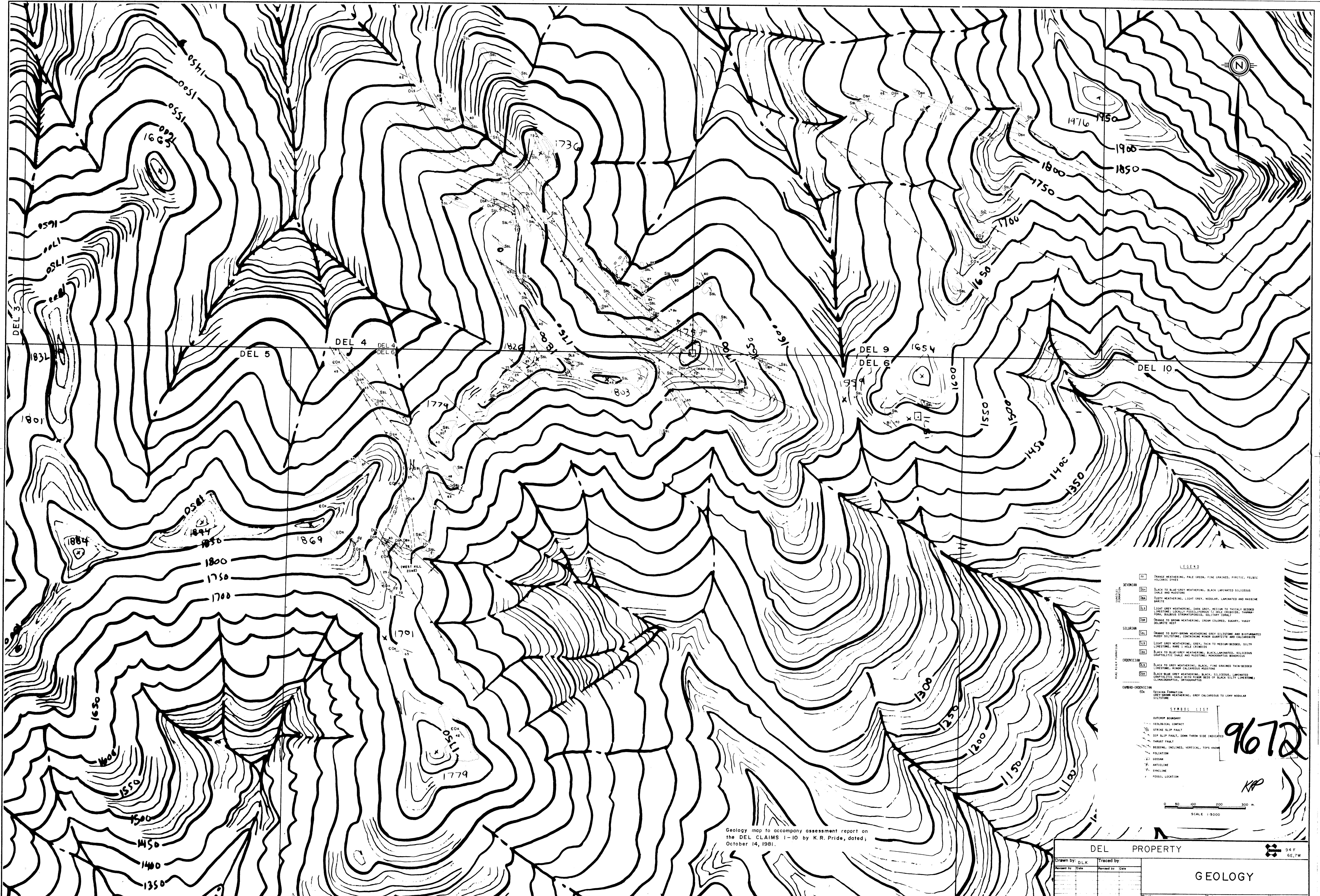
Claim map to accompany assessment report on the DEL CLAIMS 1-12 by K.R. Pride, dated, October 14, 1981.

967a

KRP

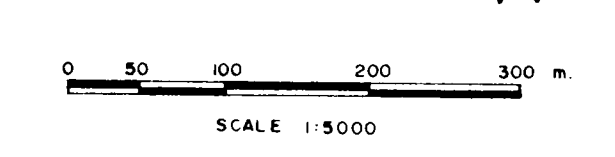


Drawn by:		Checked by:		Date:		Scale:		Sheet:	
DEL PROPERTY				94F/7		CLAIM MAP			
Scale: 1:30,000				Date: October, 1981		Page: 2			



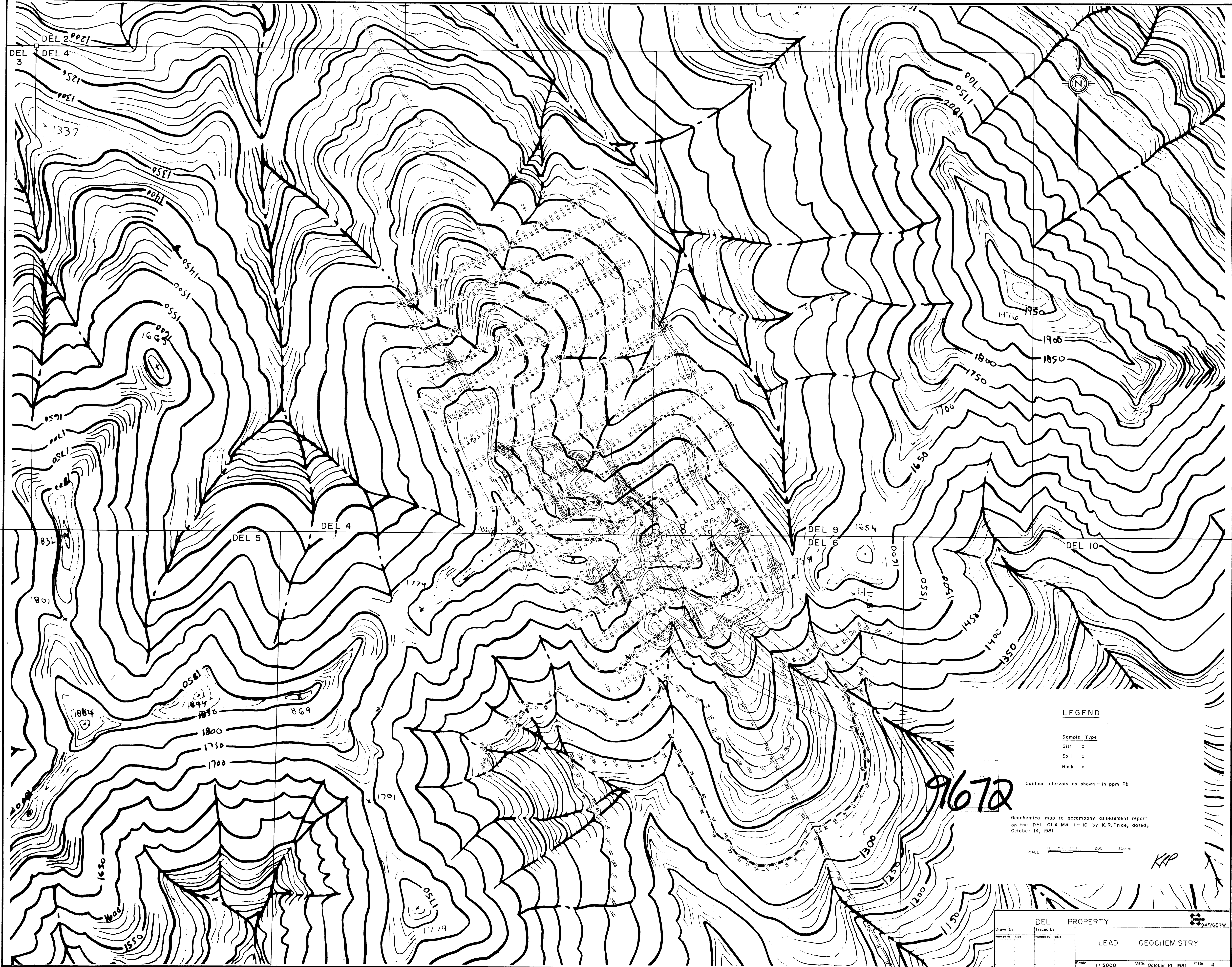
- LEGEND**
- DEVIAN**
 - Orange weathering, pale green, fine grained, pyritic, felsic volcanic dikes
 - Black to blue-grey weathering, black laminated siliceous shale and mudstone
 - Grey weathering, light grey, nodular, laminated and massive barite
 - Light grey weathering, dark grey, medium to thickly bedded limestone, locally fossiliferous (small crinoids, "hammer" pora, bulbous stromatopores, solitary corals)
 - Orange to brown weathering, cream colored, sugary, waxy dolomite reef
 - SILURIAN**
 - Orange to buff-brown weathering, grey siltstone and bituminated muddy siltstone, containing minor quartzite and calcarenite
 - Light grey weathering, grey, thin to medium-bedded, silty limestone, rare small crinoids
 - Black to blue-grey weathering, black, laminated, siliceous quartzitic shale and mudstone, rhynchonellid bryozoans
 - ORDOVICIAN**
 - Black to grey weathering, black, fine grained thin-bedded limestone, minor calcareous mudstone
 - Black to blue-grey weathering, black, siliceous, laminated quartzitic shale with thin beds of black silty limestone, clonograptus, orthograptus
 - EMBER-ORDOVICIAN**
 - Devian formation, grey-brown weathering, grey calcareous to lewy nodular siltstone

- SYMBOL LIST**
- OUTCROP BOUNDARY
 - GEOLOGICAL CONTACT
 - STRIKE SLIP FAULT
 - DIP SLIP FAULT, DOWN THROW SIDE INDICATED
 - HORIZONTAL FAULT
 - BEDDING, INCLINED, VERTICAL, TOP HORN
 - FOLIATION
 - COSSAN
 - ANTICLINE
 - SYNCLINE
 - FOSIL LOCATION



Geology map to accompany assessment report on the DEL CLAIMS 1-10 by K.R. Pride, dated, October 14, 1981.

DEL PROPERTY		94 F
Drawn by: D.L.K.	Traced by:	9672
Revised by: D.C.	Revised by: C.H.	K.R.
GEOLOGY		
Scale: 1:5,000	Date: October 14, 1981	Plate: 3



LEGEND

- Sample Type
 Silt ○
 Soil ○
 Rock x

Contour intervals as shown - in ppm Pb

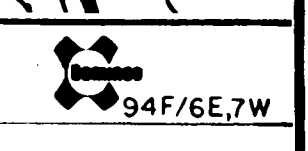
Geochemical map to accompany assessment report on the DEL CLAIMS 1-10 by K.R.Pride, dated, October 14, 1981.

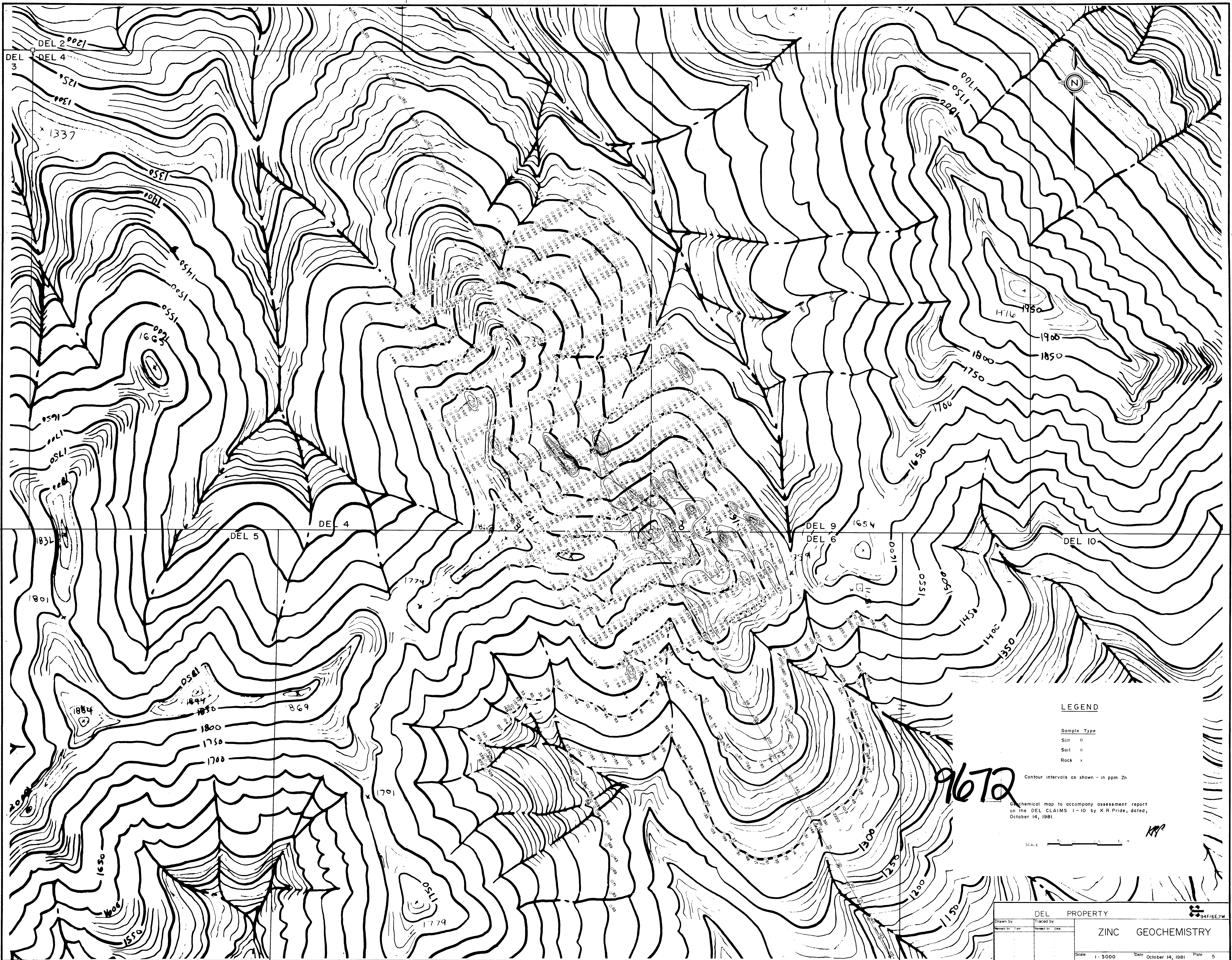
SCALE 0 50 100 200 300 m

KRP

91672

Drawn by		Traced by		DEL PROPERTY	
Checked by		Reviewed by		LEAD GEOCHEMISTRY	
Scale 1" = 5000'		Date October 14, 1981		Plate 4	





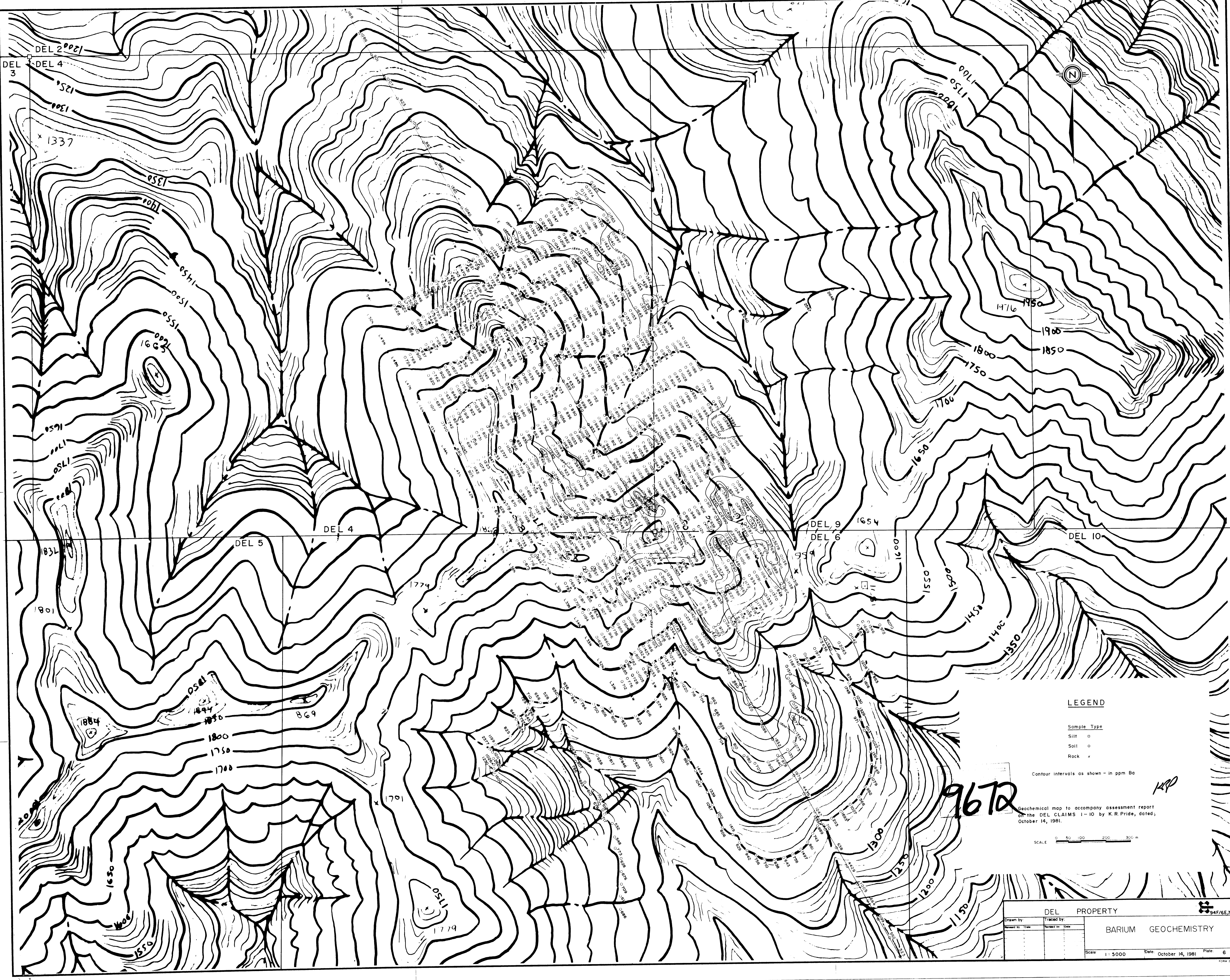
LEGEND

- Sample Type
 Silt ○
 Soil ○
 Rock x

Contour intervals as shown - in ppm Zn
 Geochemical map to accompany assessment report
 on the DEL CLAIMS 1-10 by K.R. Pride, dated,
 October 14, 1981.

SCALE _____

DEL PROPERTY		ZINC GEOCHEMISTRY
Drawn by	Traced by	
Revised by	Checked by	
Scale 1: 5000		Date October 14, 1981 Plate 5



LEGEND

- Sample Type
 Silt ○
 Soil ○
 Rock x

Contour intervals as shown - in ppm Ba

9672

Geochemical map to accompany assessment report on the DEL CLAIMS 1-10 by K.R.Pride, dated, October 14, 1981.

SCALE 0 50 100 200 300 m

DEL PROPERTY		94F/6E7W	
Drawn by:	Traced by:	BARIUM GEOCHEMISTRY	
Revised by:	Date:	Scale 1: 5000	Date: October 14, 1981
		Plate 6	