

1 August 1994

Ontario Mining Recorder's Offices  
Ministry of Northern Development and Mines

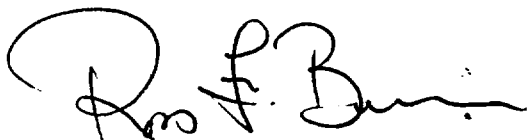
**RE: Authorization of Paul Coad, Richard Labine, Peter Harvey, Reno Pressacco and/or Diane Carter to act as agent for Royal Oak Mines Inc. when dealing with the submission of work reports**

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This is to certify that Paul Coad, Richard Labine, Peter Harvey, Reno Pressacco and/or Diane Carter are authorized to act as agents for Royal Oak Mines Inc. for the purpose of filing assessment work credits and their distribution for a period of one (1) year or until further notice.

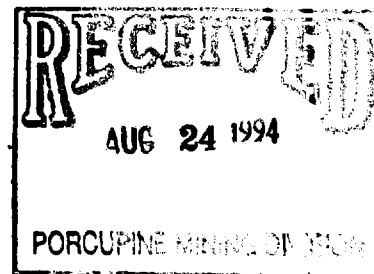
Yours truly,

ROYAL OAK MINES INC.



Ross F. Burns  
Vice President, Exploration

RFB/lha





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**ROYAL OAK MINES INC.  
TIMMINS DIVISION**

**NIGHTHAWK LAKE PROJECT  
RAMP ZONE PIT AREA  
CODY TOWNSHIP  
PORCUPINE MINING DIVISION  
1994 ASSESSMENT REPORT  
DIAMOND DRILLING**

**Submitted by:**

**P.G. Harvey  
Project Geologist  
Eastern Canada Exploration  
Royal Oak Mines Inc.**

**August 1994**

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## **1.0 Introduction**

The Ramp Zone area of the Nighthawk Lake Project, owned by Royal Oak Mines Inc., was drilled with a series of shallow holes during February, 1993, in an effort to outline gold mineralization suitable for open pit mining by the Timmins Division of Royal Oak Mines Inc.

In total, 2,369 feet of BQ core was drilled in thirteen holes with two drill rigs supplied by Bradley Bros. Ltd., between February 20 and 26, 1993.

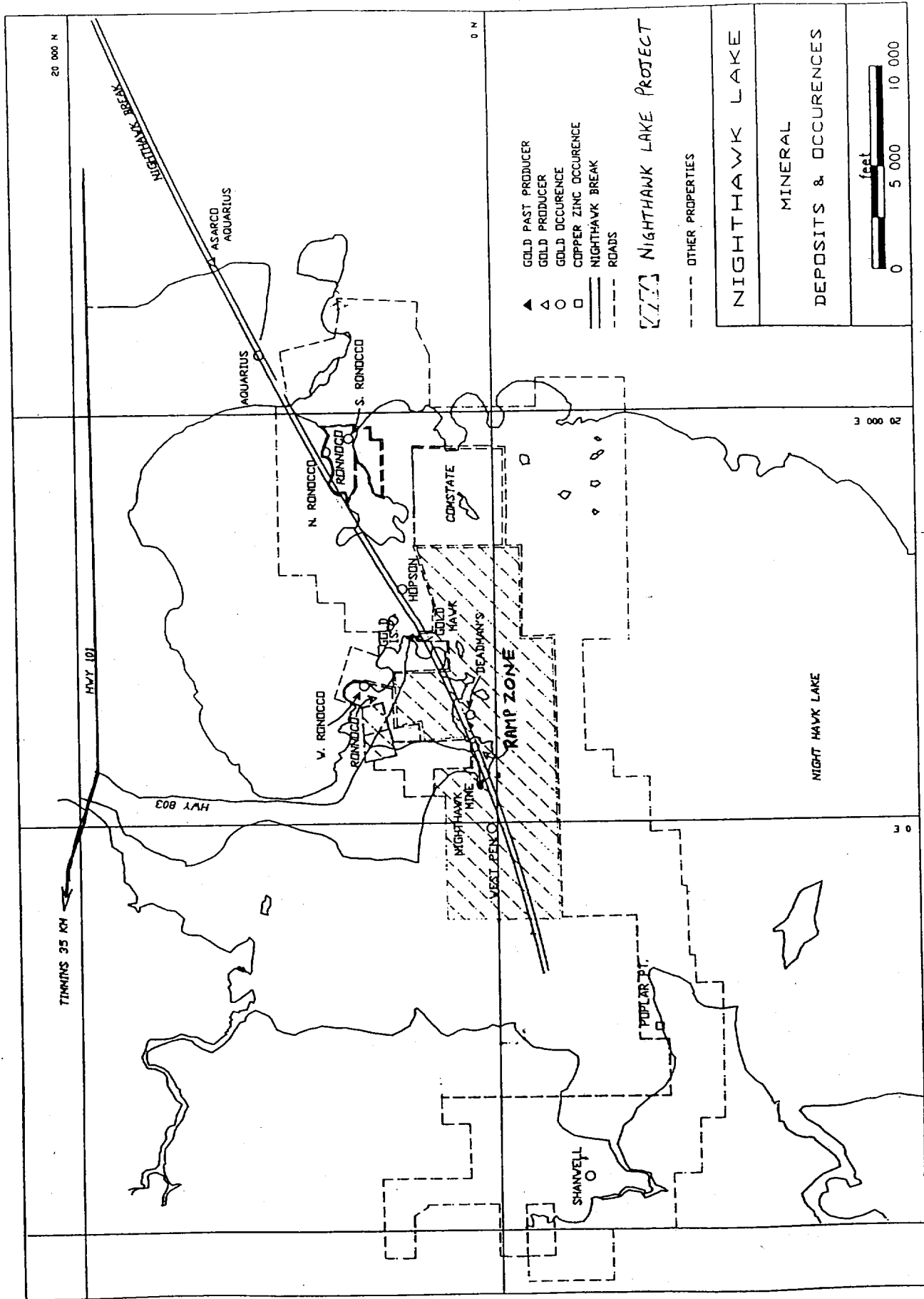
The program was successful, with each hole returning an economic intersection. Using the data from this program, and data from previous work, an open pit inventory (to a vertical depth of 65 feet) was calculated at 125,967 tons at 0.09 opt Au.

Royal Oak Mines Inc. secured the necessary permits to mine this zone, and site preparation and overburden removal commenced in April of 1994, with mining taking place through the balance of 1994.

## **2.0 Property Location and Access**

The Nighthawk Lake Project is located on and around the North Peninsula of Nighthawk Lake in Cody Township, about 35 km east of Timmins, Ontario. It is accessed via Highway 101 and Provincial Road 803. The property is part of a larger parcel of land in the Nighthawk Lake area controlled by Royal Oak Mines Inc, either through direct ownership or through five separate agreements (Figure 1).

The holes drilled on this program were to outline near-surface gold mineralization on the Ramp Zone, and are within claim P15603 (HR918) and the adjacent leased claim P333172 (Figure 2).





### **3.0 Past Work**

The Nighthawk Lake Project area has been the site of gold exploration since 1907 when gold was first discovered on Gold Island in Nighthawk Lake. The Nighthawk Lake Mine (originally called the Porcupine Peninsular Mine) was discovered in 1909 when the water level in the lake was lowered, which exposed the No. 1 Vein. Subsequent underground mining and exploration activity has occurred at the site between 1917 and the present, with what is now referred to as the Ramp Zone being discovered in 1947-1948 through diamond drilling from an exploration drift on the 1000 foot level.

Work by Pamour/Pamorex between 1973 and 1989 in the area of the Ramp Zone included a series of surface drilling programs, as well as driving a 750 foot long ramp from surface and drilling 28 short holes from underground in 1977. This past work on the Ramp Zone has produced mixed results, and as such it has never been mined (Coad, 1993).

In an attempt to outline suitable open pit ore for the Timmins Division of Royal Oak Mines Inc., the Exploration Department re-examined the Ramp Zone in 1992 and outlined the open pit oriented drill program which is the subject of this report.

### **4.0 Geology**

#### **4.1 Regional Geology**

The Nighthawk Lake area is underlain by Archean mafic volcanics with a minor amount of felsic volcanics. Sediments which overlie the volcanics to the north consist primarily of greywackes and interbedded argillites. Ultramafic rocks intrude the volcanics and are comprised of serpentized peridotites and carbonatized komatiites. Felsic intrusives are common and consist of quartz-feldspar porphyry, feldspar porphyry, syenite, aplite and felsite. All rocks are cut by late diabase dikes (Leahy, 1971).

The Destor-Porcupine Fault crosses the north end of Northeast Bay of Nighthawk Lake. The Nighthawk Break lies to the south, and has been traced from west of the Nighthawk Mine area eastward (at a strike of 070°) through to its convergence with the Destor-Porcupine Fault in Stock Township. Several significant gold occurrences and deposits lie along the Nighthawk Break, as it has acted as a gold localizing feature of the area.

#### **4.2 Local Geology**

The rocks of the mine area are variably altered (carbonate, sericite, silica, fuchsite, pyrite) mafic and ultramafic volcanics. These units are complexly dragfolded along sub-parallel splays to the Nighthawk Break. Brown sericite, silica flooding and 2-3% pyrite are good indicators for elevated gold values.

Deadman Island, which lies about 1,000 feet east of the Ramp Zone and contains similar geology, was studied by the O.G.S. in 1992 (Siragusa, G.M., 1992). Siragusa shows the complex geology of the Nighthawk Break, as well as the fact that elevated gold values occur in areas of alteration and veining adjacent to sub-parallel splays (areas of high strain) off the Nighthawk Break.

#### **5.0 1993 Drill Program**

Thirteen holes (2,369 feet) were drilled on the Ramp Zone between February 20 and 26, 1993. The holes were targeted to drill near surface (<65 feet vertical) mineralization thought to occur above the known limits of the Ramp Zone in an effort to outline open pit ore. The holes are shown in plan view in Figure 2. Each hole returned an economic intersection and the results are shown in Table 1.

The results from the program were combined with data from earlier work, and a mineral inventory was calculated (to 65 feet vertical) at 125, 967 tons at 0.09 opt Au. Mining on the zone by open pit methods commenced in the summer of 1994.

#### **6.0 Conclusions and Recommendations**

The 1993 drill program on the Ramp Zone pit area of the Nighthawk Lake Project was successful in outlining a zone of open pit ore that is currently being mined by the Timmins Division of Royal Oak Mines Inc.

This work renewed interest in the Nighthawk Lake Project and recommendations for future work will be oriented towards outlining more economic zone of gold mineralization, and will include data review and diamond drilling.



(6)

TABLE No 1

Ramp Zone Drilling-February, 1993								
Hole No.	Zone	Section	Northing	Dip	Azimuth	Ovb	Length	Results
NP93-23	East	4350E	1070N	-55	360	43	121	.041 opt Au/14.1'(65.5-79.6')
NP93-24	East	4350E	1070N	-75	360	33	170	.031 opt Au/25'(90-115'); .035 opt Au/4'(166-170')
NP93-14	East	4250E	1075N	-45	360	49	151	.05 opt Au/5.5'(78.5-84); .23 opt Au/25.5'(98.5-124')
NP93-10	East	4200E	1080N	-45	360	53	220	0.11 opt Au/30.25'(138.25-168.5')
NP93-11	East	4100E	1400N	-45	180	62	200	.078 opt Au/14.8'(167-181.8')
NP93-12	East	4050E	1158N	-45	360	43	230	.048 opt Au/17.8'(43-61'); .063 opt Au/7.5'(73.5-81')
NP93-12 cont'd								.04 opt Au/11'(144-155'); .037 opt Au/25'(193-218')
NP93-13	East	4000E	1200N	-45	360	33	230	.114 opt Au/4.5'(75.5-80'); .046 opt Au/21.7'(167.3-189')
NP93-15	Central	3700E	1300N	-45	360	49	151	0.12 opt Au/11.8'(83.2-95)+0.06 opt Au/19.0'(115')
NP93-16	Central	3600E	1340N	-45	360	49	161	.092 opt Au/26.0'(60-86')
NP93-17	Central	3500E	1320N	-45	360	63	200	0.128 opt Au/38.0' or .181 opt Au/24.2'(67-105')
NP93-18	West	3400E	1380N	-45	360	105	170	0.146 opt Au/3.0'(167-170')
NP93-21	West	3300E	1470N	-45	360	82	185	.064 opt Au/10.5'(89.5-100'); .097 opt Au/47.7'(111.3-159')
NP93-22	West	3250E	1500N	-45	360	82	180	.209 opt Au/4'(82-86'); .228 opt Au/3'(105-108')
NP93-22 cont'd								.089 opt Au/11'(119-130'); .061 opt Au/1.5'(153.5-155')

Total: 13 holes 2369

Average Length (feet) 182

Average Overburden along core (feet) 57

\* 6.0' of grind/core lost @135.7-145' area

## LIST OF REFERENCES

- Coad, P.R. (1993) **Royal Oak Mines Inc., Diamond Drill Report, Cody and Macklem Townships, Assessment Report, Porcupine Mining Division**
- Leahy, E.J. (1971) **Geology of the Night Hawk Lake Area, District of Cochrane, Ontario, O.D.M., GR 96, col. map 2222**
- Siragusa, G.M. (1992) **Precambrian Geology, Gold Mineralization in the Northern Night Hawk Lake Area of the Abitibi Belt, Ontario Geological Survey, Open File Map 201**

## STATEMENT OF QUALIFICATIONS

I, Peter G. Harvey, of the City of Timmins, Province of Ontario, do hereby certify that:

- 1 I received a B.Sc. degree (Honours) in Geology from Lakehead University, Thunder Bay, Ontario, in 1985.
- 2 I have been employed as a geologist by various mining companies in Ontario since 1985.
- 3 I am the author of this report.
- 4 I have no direct interest, nor do I have any shares of any company exploring the properties described in this report, nor on any adjacent or surrounding properties.

Dated this 12 th day of August 1994, Timmins, Ontario.

Peter G. Harvey  
Project Geologist  
Eastern Canada Exploration  
Royal Oak Mines Inc.

**APPENDIX 1**  
**Drill Hole Sections**

**LEGEND - NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

- KOM Komatiite
- TCR Talc-carbonate rock
- TCS Talc-chlorite schist
- UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

- CLS Chlorite schist
- MVO Mafic volcanic

**CARBONATIZED ROCKS**

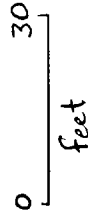
- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

**SEDIMENTS**

- ARG Argillite
- COL Conglomerate
- SED Sediments
- TUF Tufaceous sediments

**OTHER**

- FEL Felite - aphanitic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE  
SECTION 4350E  
(+/- 26')

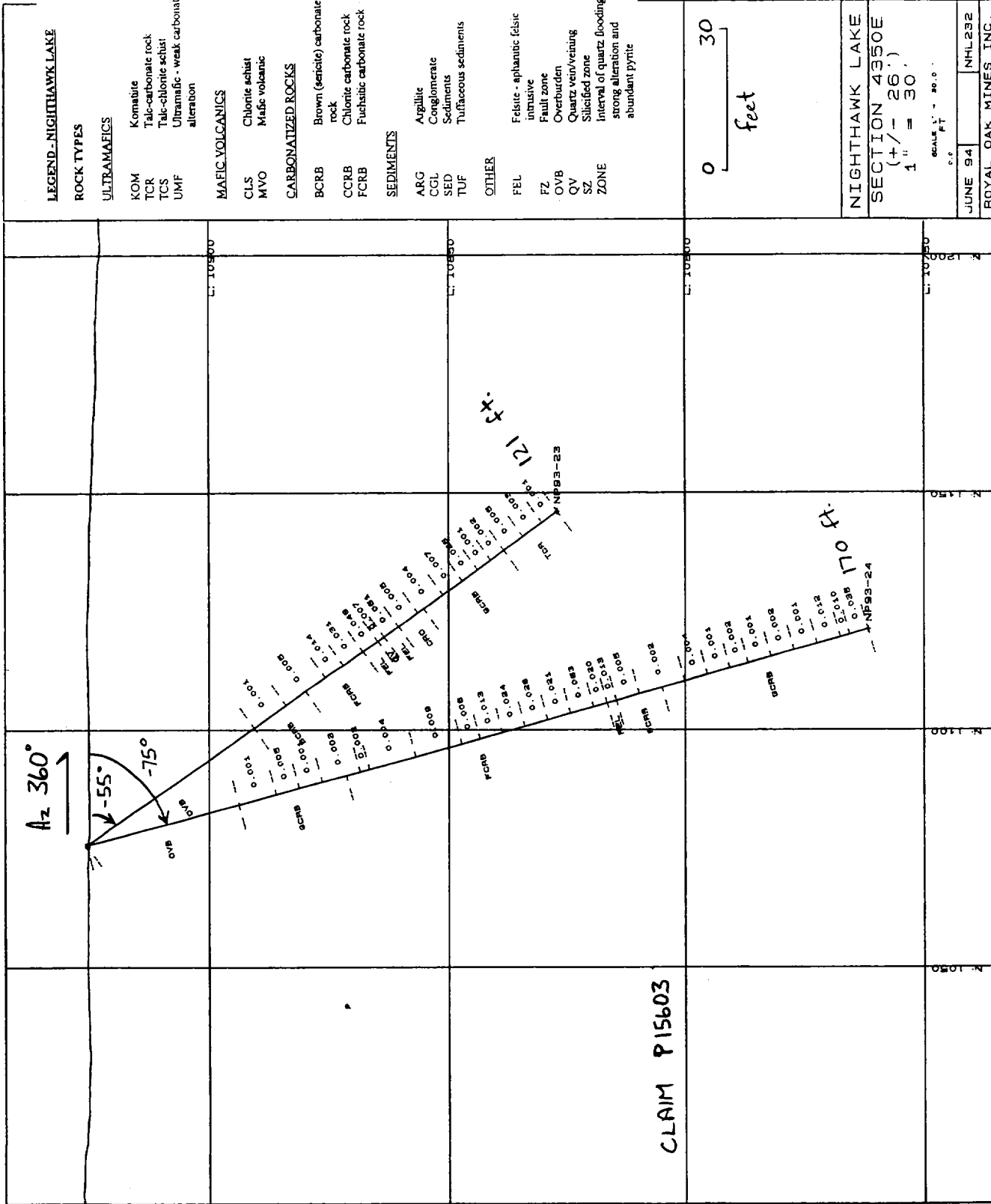
1" = 30'

SCALE: 1" = 30.0'

JUNE 94

NHL232

ROYAL OAK MINES INC.



**LEGEND - NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

- KOM Komatiite
- TCR Talk-carbonate rock
- TCS Talk-chlorite schist
- UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

- CLS Chlorite schist
- MVO Mafic volcanic

**CARBONATIZED ROCKS**

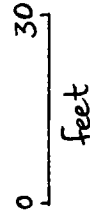
- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

**SEDIMENTS**

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tuffaceous sediments

**OTHER**

- FEL Felsite - aphanitic felsic intrusive
- FZ Fault zone
- QVB Overburden
- QV Quartz vein/Veinung
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE

SECTION 4250E  
(+/- 26')

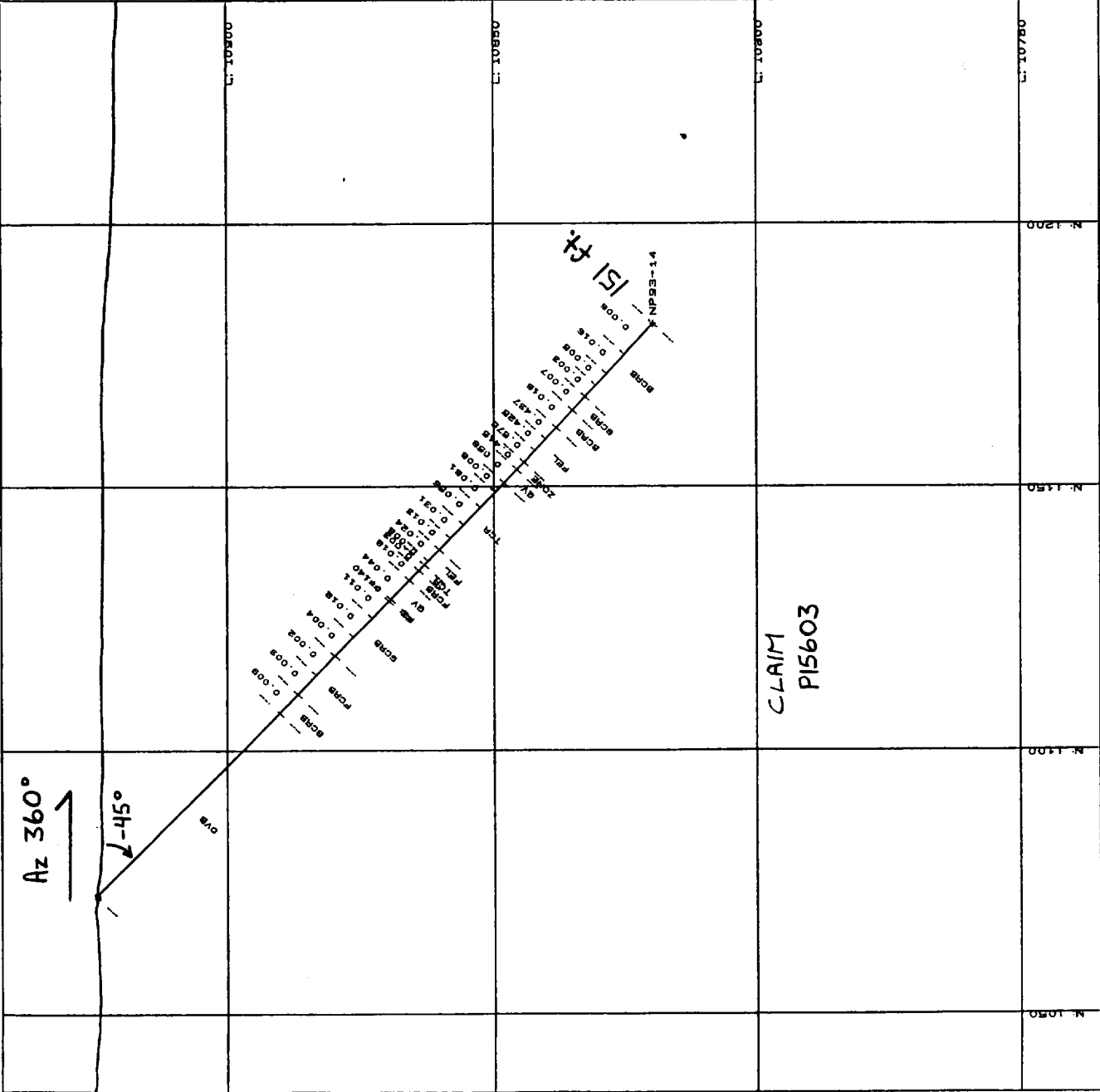
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SCALE 1" = 30'

JUNE 94

NHL293

ROYAL OAK MINES INC.



**LEGEND - NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

KOM Komatiite  
 TCR Talc-carbonate rock  
 TCS Talc-chlorite schist  
 UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

CLS Chlorite schist  
 MVO Mafic volcanic

**CARBONATIZED ROCKS**

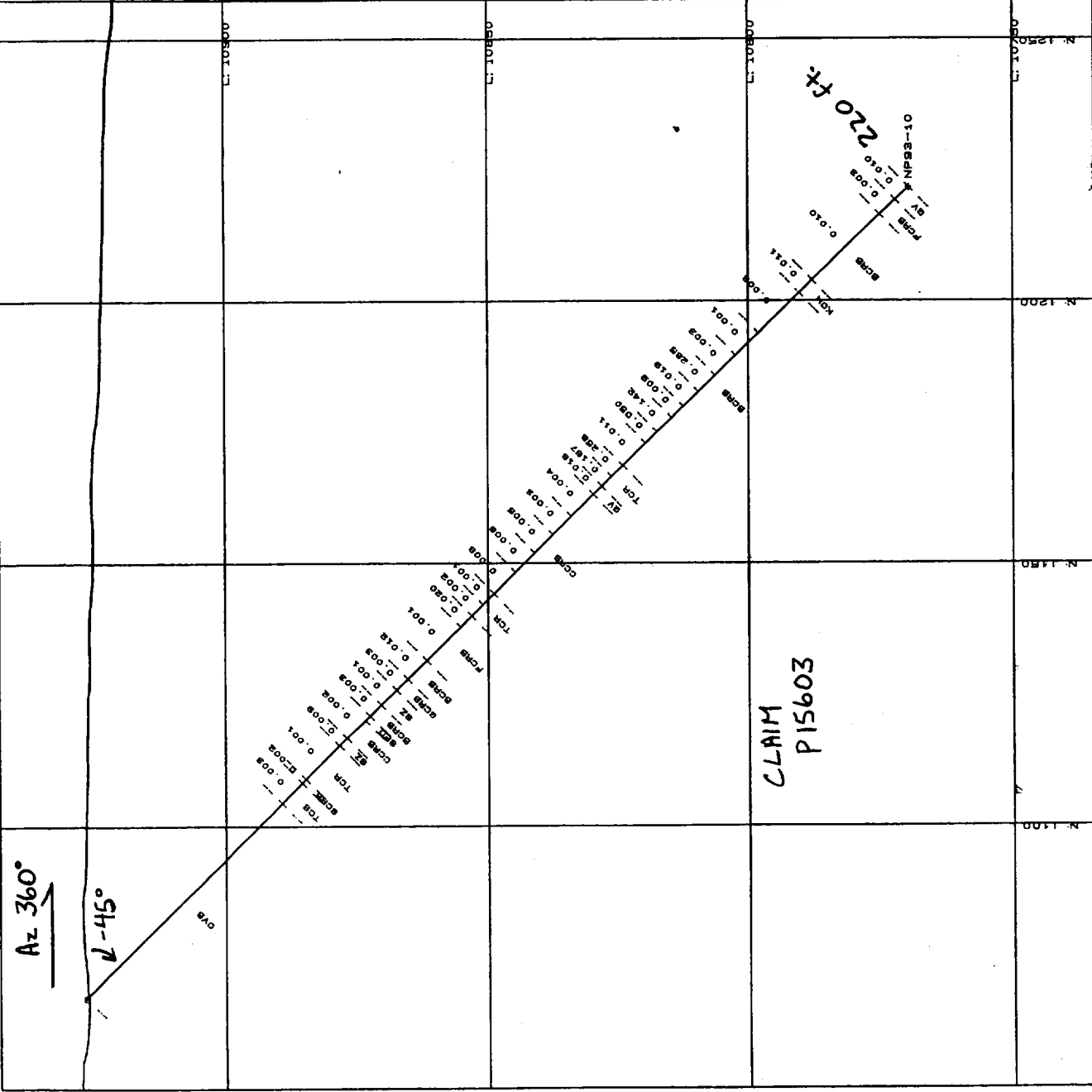
BCRB Brown (sericite) carbonate rock  
 CCRB Chlorite carbonate rock  
 FCRB Fuchsite carbonate rock

**SEDIMENTS**

ARG Argillite  
 CGL Conglomerate  
 SED Sediments  
 TUF Tuffaceous sediments

**OTHER**

FEL Felsite - aphanitic felsic intrusive  
 FZ Fault zone  
 OVB Overburden  
 QV Quartz vein/veining  
 SZ Silicified zone  
 ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE  
 SECTION 4200E  
 (+/- 26')  
 1" = 30'

JUNE 94 NHL234  
 ROYAL OAK MINES INC.

**LEGEND: NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

- KOM Komatiite
- TCR Tale-carbonate rock
- TCS Tale-chlorite schist
- UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

- CLS Chlorite schist
- MVO Mafic volcanic

**CARBONATIZED ROCKS**

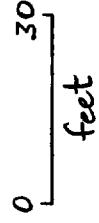
- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

**SEDIMENTS**

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tuffaceous sediments

**OTHER**

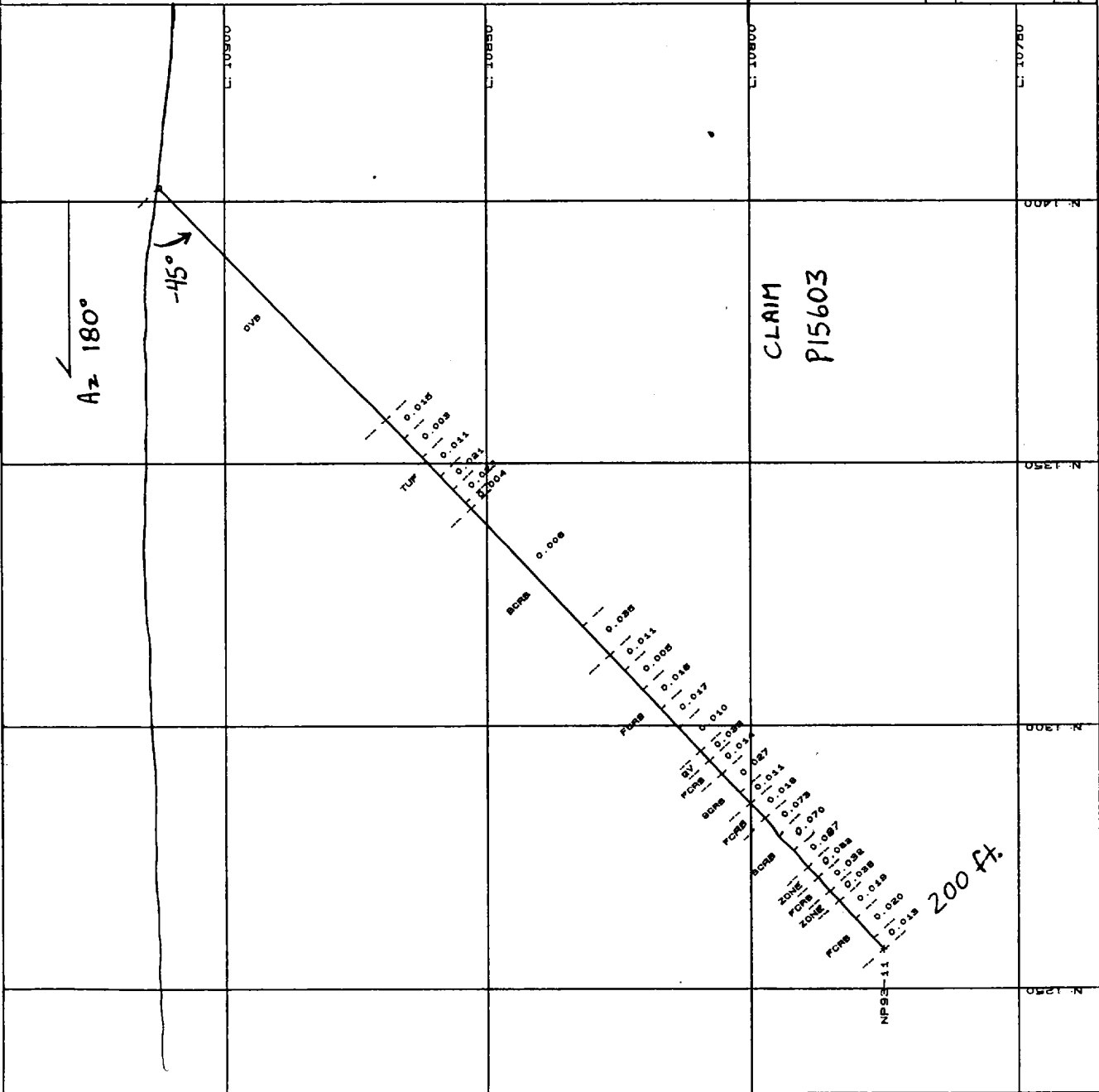
- FEL Felsite - aphanitic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE  
SECTION 4100E  
(+/- 26')

1" = 30'  
SCALE: 1" = 30'

JUNE 94  
NHL235  
ROYAL OAK MINES INC.





LEGEND - NIGHTHAWK LAKE

ROCK TYPES

ULTRAMAFICS

- KOM Komatiite
- TCR Talc-carbonate rock
- TCS Talc-chlorite schist
- UMF Ultramafic - weak carbonate alteration

MAFIC VOLCANICS

- CLS Chlorite schist
- MVO Mafic volcanic

CARBONATIZED ROCKS

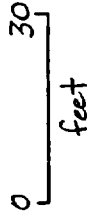
- BCRB Brown (terrace) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

SEDIMENTS

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Turfaceous sediments

OTHER

- FEL Felsite - aphanitic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE

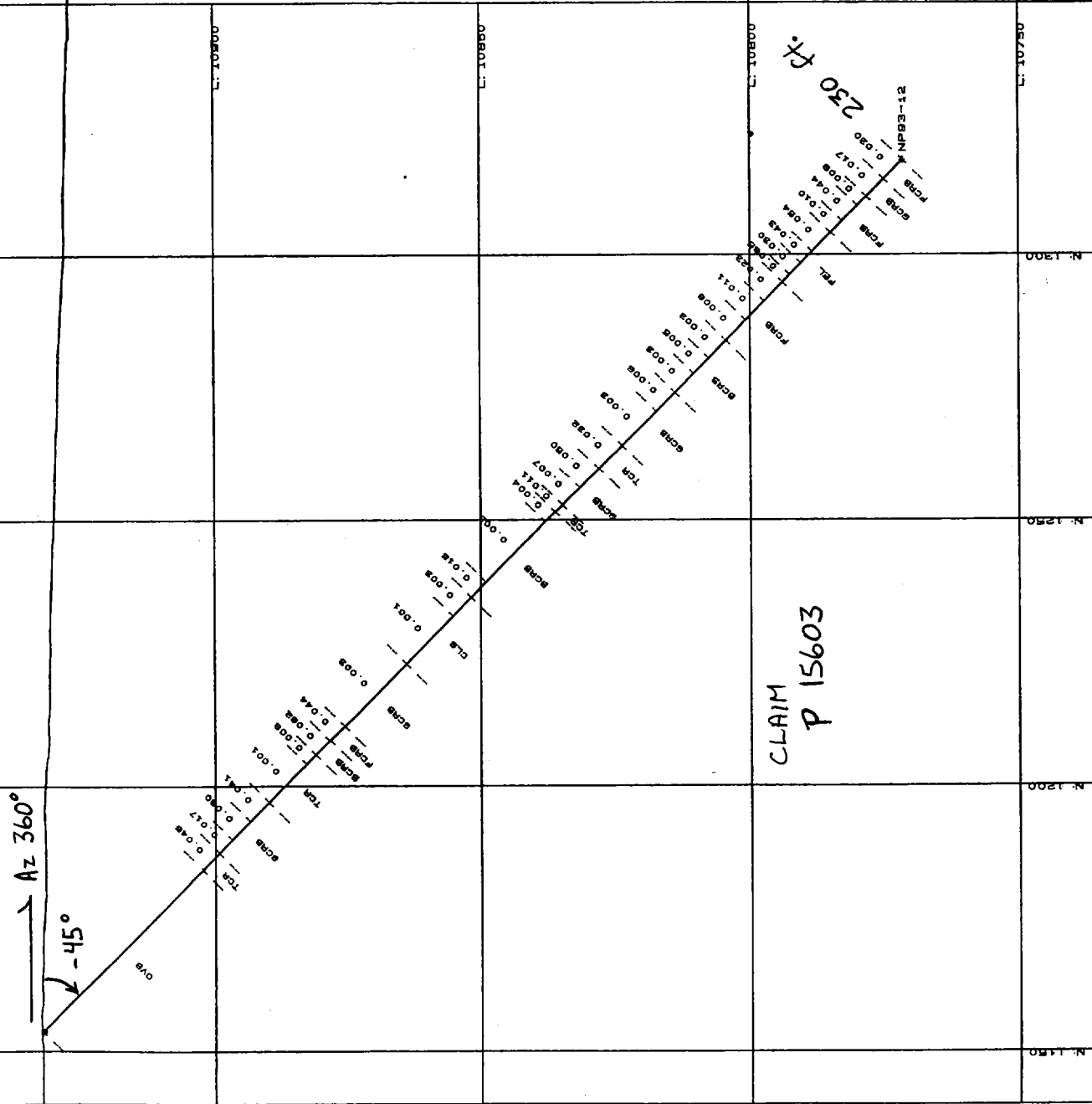
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SCALE: 1" = 30.0'

JUNE 94

ROYAL OAK MINES INC.



**LEGEND - NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

- KOM Komatiite
- TCR Talc-carbonate rock
- TCS Talc-chlorite schist
- UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

- CLS Chlorite schist
- MVO Mafic volcanic

**CARBONATIZED ROCKS**

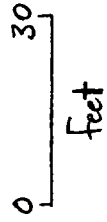
- BCRB Brown (keritic) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

**SEDIMENTS**

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tuffaceous sediments

**OTHER**

- FEL Felite - sphaerulic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



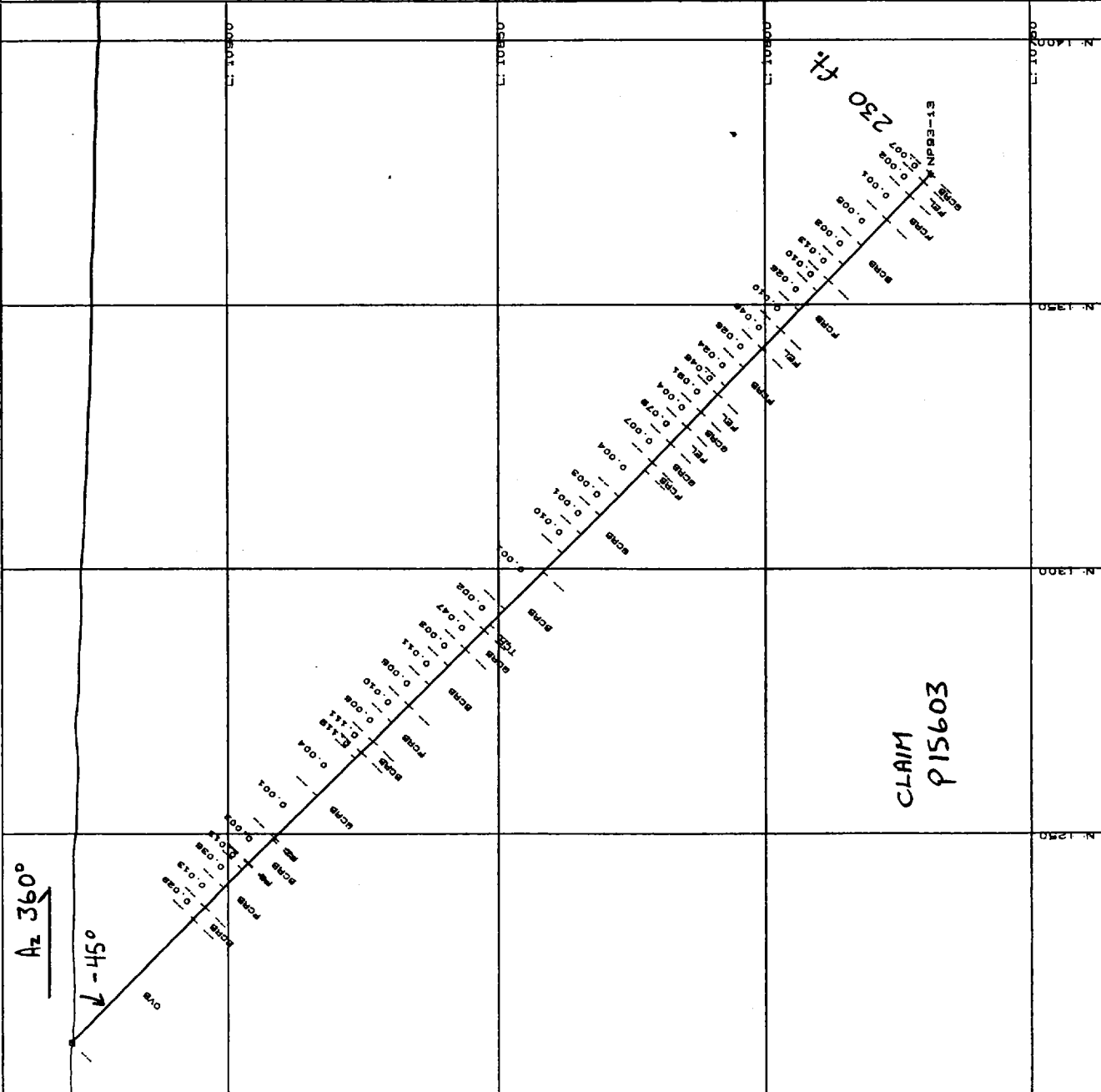
NIGHTHAWK LAKE  
SECTION 4000E  
(+/- 26')  
1" = 30'

SCALE 1" = 30.0'

0.0 FT

JUNE 94 NHL-237

ROYAL OAK MINES INC.



**LEGEND - NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

- KOM Komatiite
- TCR Talc-carbonate rock
- TCS Talc-chlorite schist
- UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

- CLS Chlorite schist
- MVO Mafic volcanic

**CARBONATIZED ROCKS**

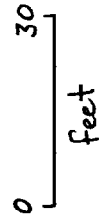
- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

**SEDIMENTS**

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tuffaceous sediments

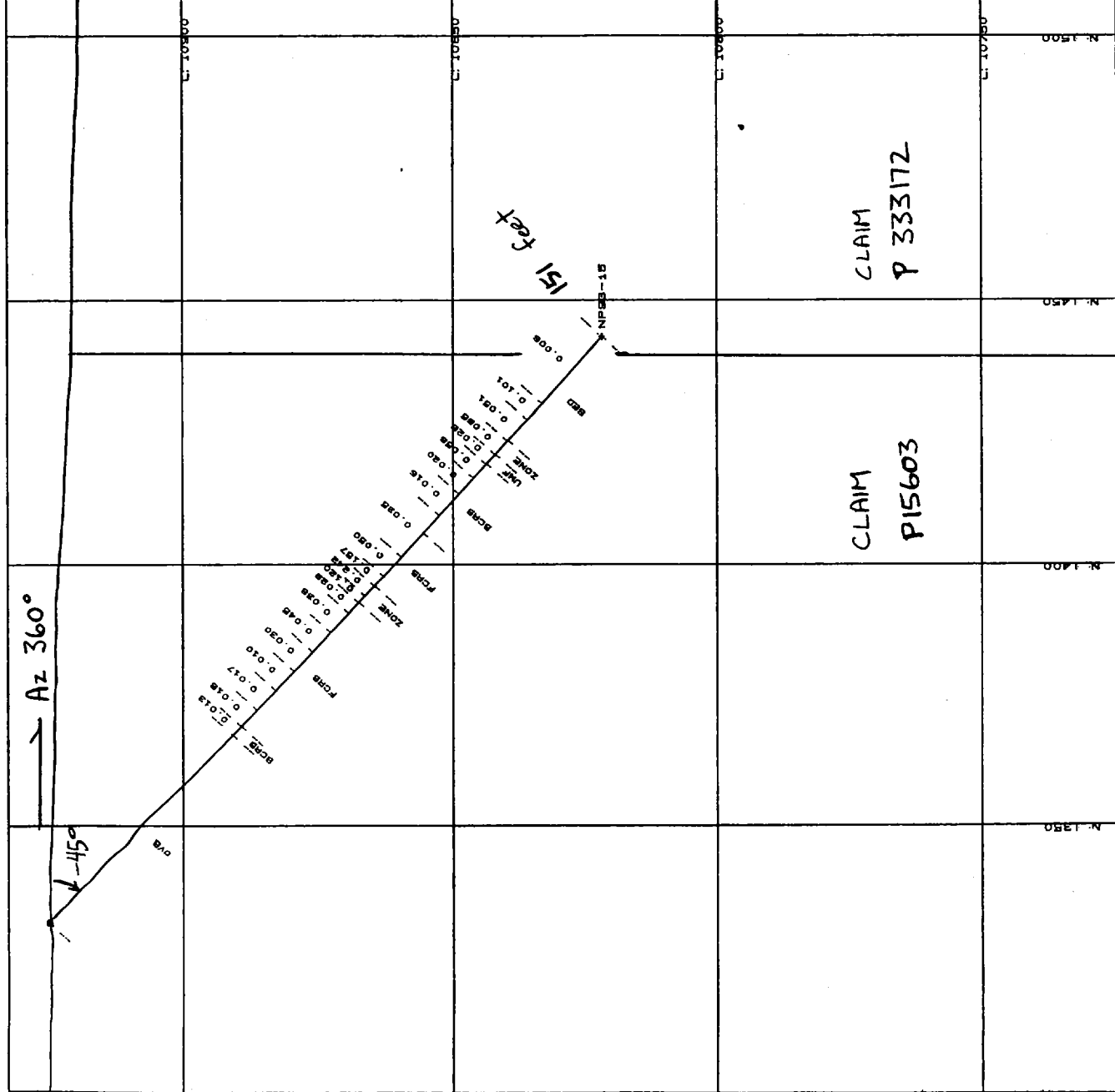
**OTHER**

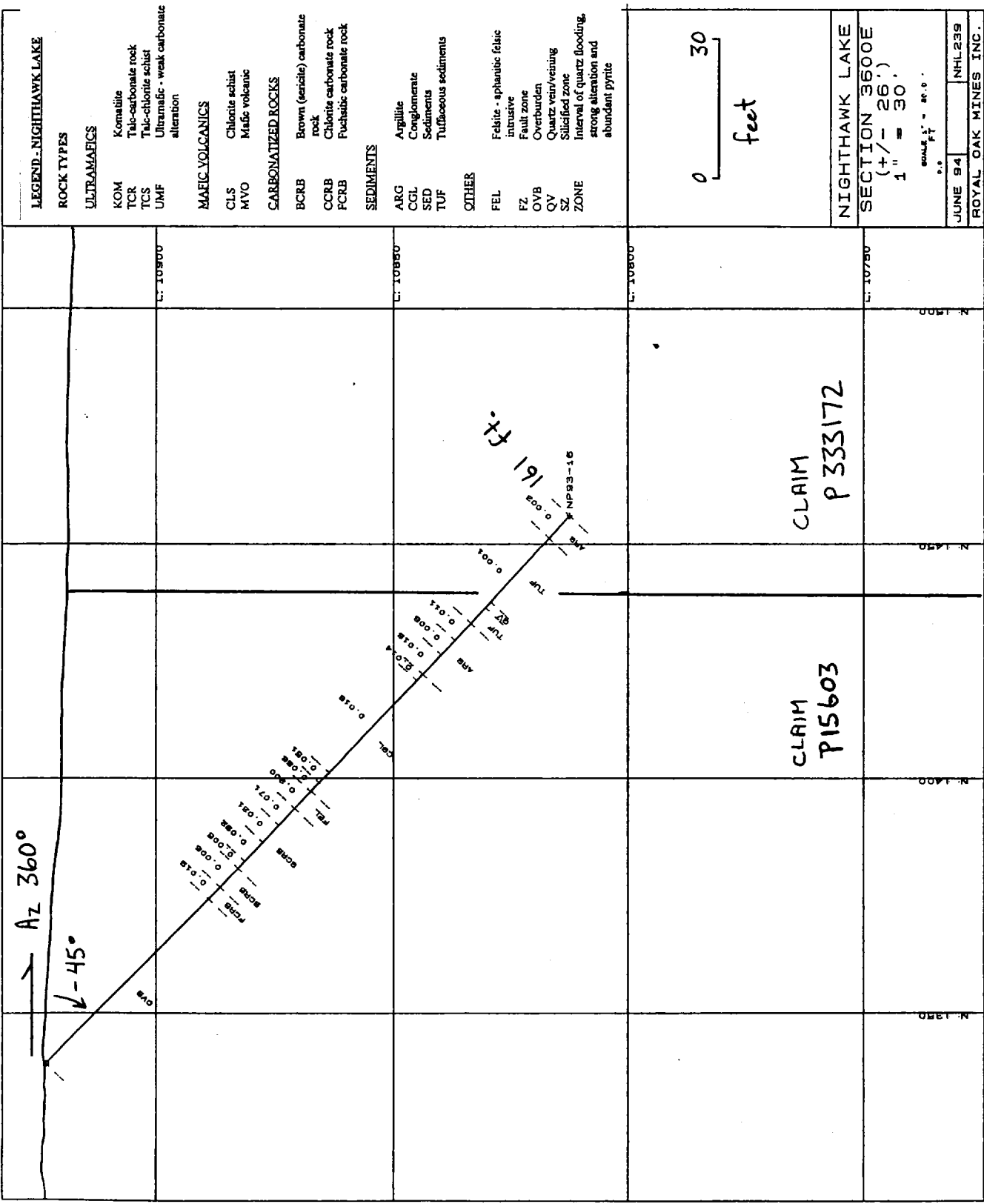
- FEL Feldite - aphanitic fabric intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE  
SECTION 3700E  
(+/- 26')  
1" = 30'

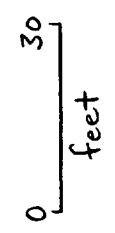
JUNE 94  
NHL288  
ROYAL OAK MINES INC.





**LEGEND - NIGHTHAWK LAKE**

- ROCK TYPES**
- ULTRAMAFICS**
    - KOM Komatiite
    - TCR Tale-carbonate rock
    - TCS Tale-schist
    - UMF Ultramafic - weak carbonate alteration
  - MAFIC VOLCANICS**
    - CLS Chlorite schist
    - MVO Mafic volcanic
  - CARBONATIZED ROCKS**
    - BCRB Brown (sericite) carbonate rock
    - CCRB Chlorite carbonate rock
    - FCRB Fuchsite carbonate rock
  - SEDIMENTS**
    - ARG Argillite
    - CGL Conglomerate
    - SED Sediments
    - TUF Tufaceous sediments
  - OTHER**
    - FEL Felite - aphanitic felsic intrusive
    - FZ Fault zone
    - OV Burden
    - QV Quartz vein/veining
    - SZ Silicified zone
    - ZONE Interval of quartz flooding, strong alteration and abundant pyrite

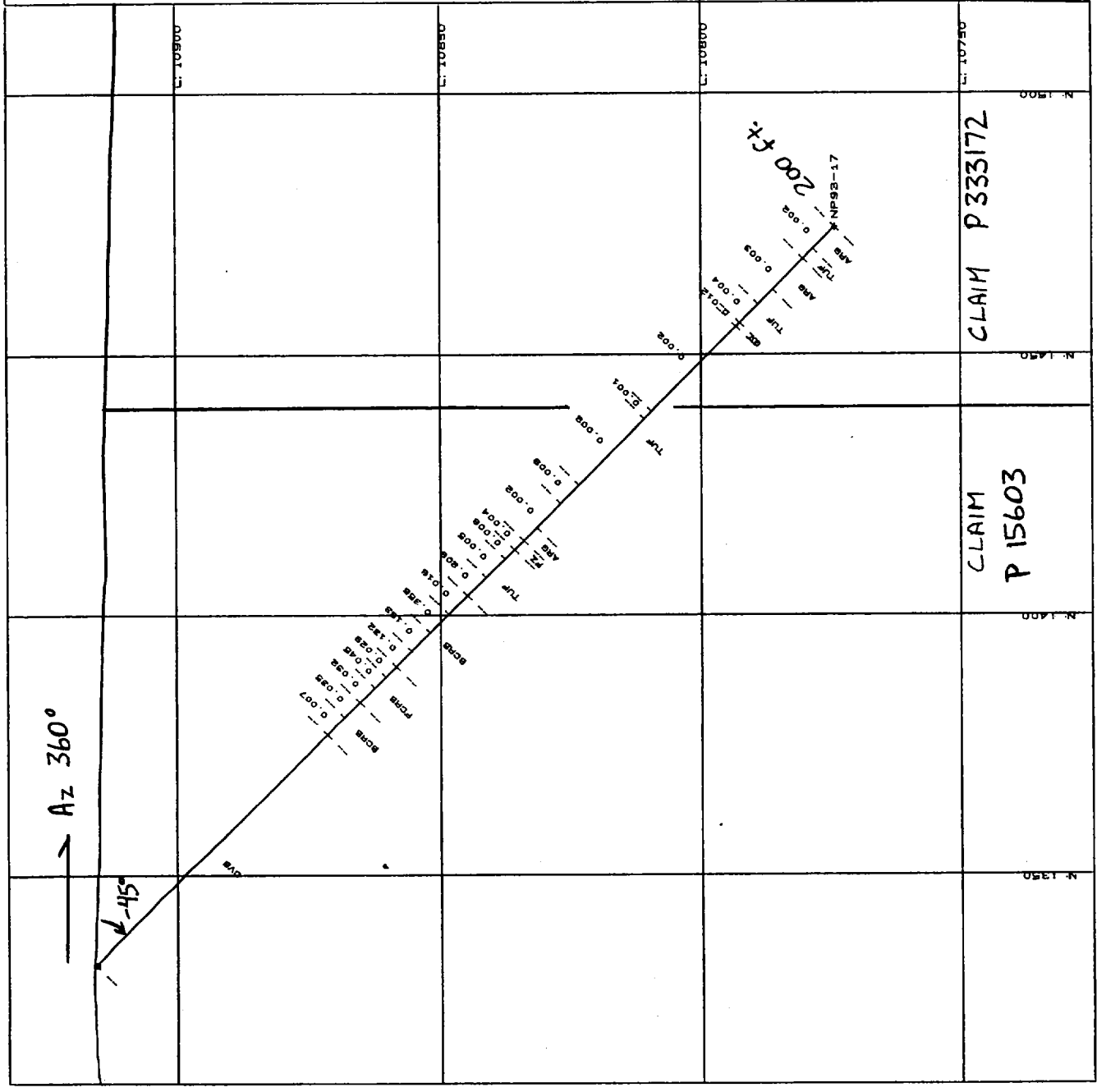


NIGHTHAWK LAKE  
SECTION 3500E  
(+/- 26')

1" = 30'

SCALE 1" = 30.0'

JUNE 94 NHL240  
ROYAL OAK MINES INC.



LEGEND-NIGHTHAWK LAKE

ROCK TYPES

ULTRAMAFICS

- KOM Komatiite
- TCR Talc-carbonate rock
- TCS Talc-chlorite schist
- UMF Ultramafic - weak carbonate alteration

MAFIC/VOLCANICS

- CLS Chlorite schist
- MVO Mafic volcanic

CARBONATIZED ROCKS

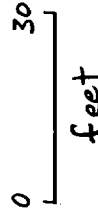
- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- PCRB Fuchsite carbonate rock

SEDIMENTS

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tufaceous sediments

OTHER

- FEL Feldite - aphanitic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Sulfidated zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE

SECTION 3400E  
(+/- 26')

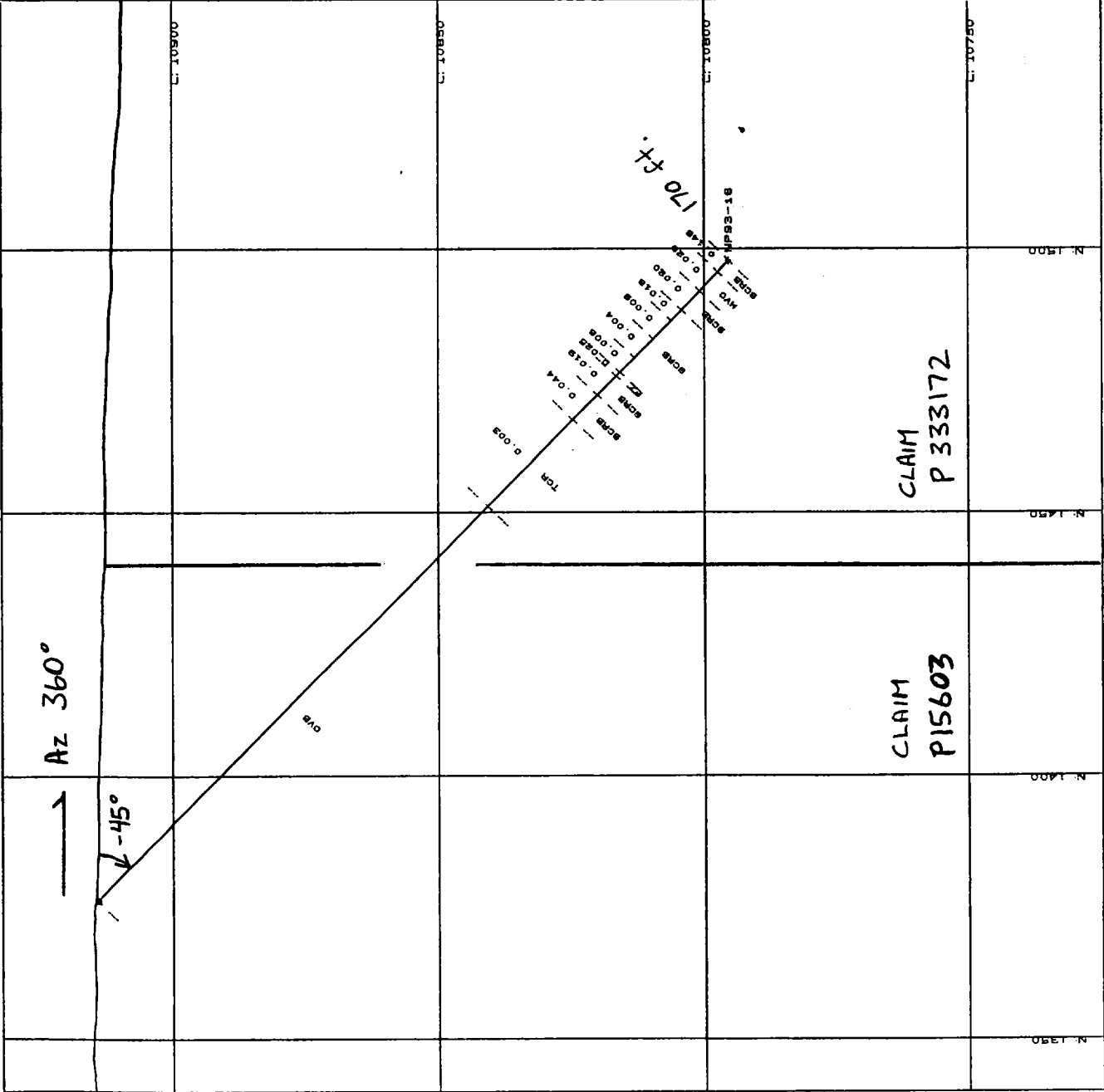
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SCALE: 1" = 30.0'

JUNE 94

NHL241

ROYAL OAK MINES INC.



LEGEND-NIGHTHAWK LAKE

ROCK TYPES

ULTRAMAFICS

- KOM Komatiite
- TCR Talc-carbonate rock
- TCS Talc-chlorite schist
- UMF Ultramafic - weak carbonate alteration

MAFIC VOLCANICS

- CLS Chlorite schist
- MVO Mafic volcanic

CARBONATIZED ROCKS

- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

SEDIMENTS

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tuffaceous sediments

OTHER

- FEL Felsite - aphanitic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite

NIGHTHAWK LAKE

SECTION 3300E  
(+/- 26')

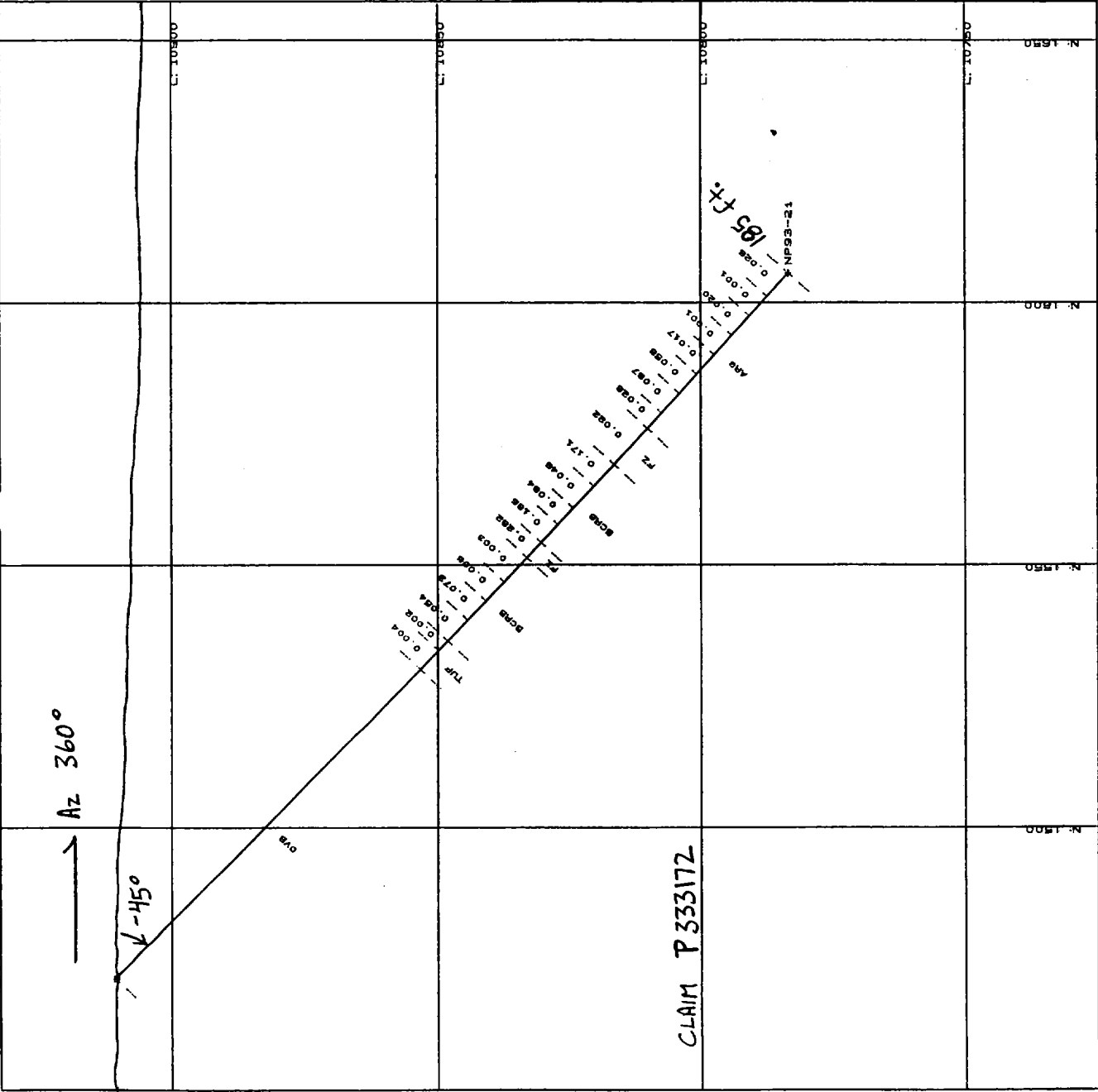
1" = 30'

SCALE 1" = 30.0'

JUNE 94

NHL242

ROYAL OAK MINES INC.



CLAIM P 333172

**LEGEND - NIGHTHAWK LAKE**

**ROCK TYPES**

**ULTRAMAFICS**

- KOM Komatiite
- TCR Tale-carbonate rock
- TCS Tale-chlorite schist
- UMF Ultramafic - weak carbonate alteration

**MAFIC VOLCANICS**

- CLS Chlorite schist
- MVO Mafic volcanic

**CARBONATIZED ROCKS**

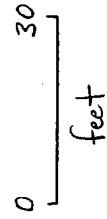
- BCRB Brown (sericite) carbonate rock
- CCRB Chlorite carbonate rock
- FCRB Fuchsite carbonate rock

**SEDIMENTS**

- ARG Argillite
- CGL Conglomerate
- SED Sediments
- TUF Tuffaceous sediments

**OTHER**

- FEL Felsite - aphanitic felsic intrusive
- FZ Fault zone
- OVB Overburden
- QV Quartz vein/veining
- SZ Silicified zone
- ZONE Interval of quartz flooding, strong alteration and abundant pyrite



NIGHTHAWK LAKE

SECTION 3250E

(+/- 26')

1" = 30'

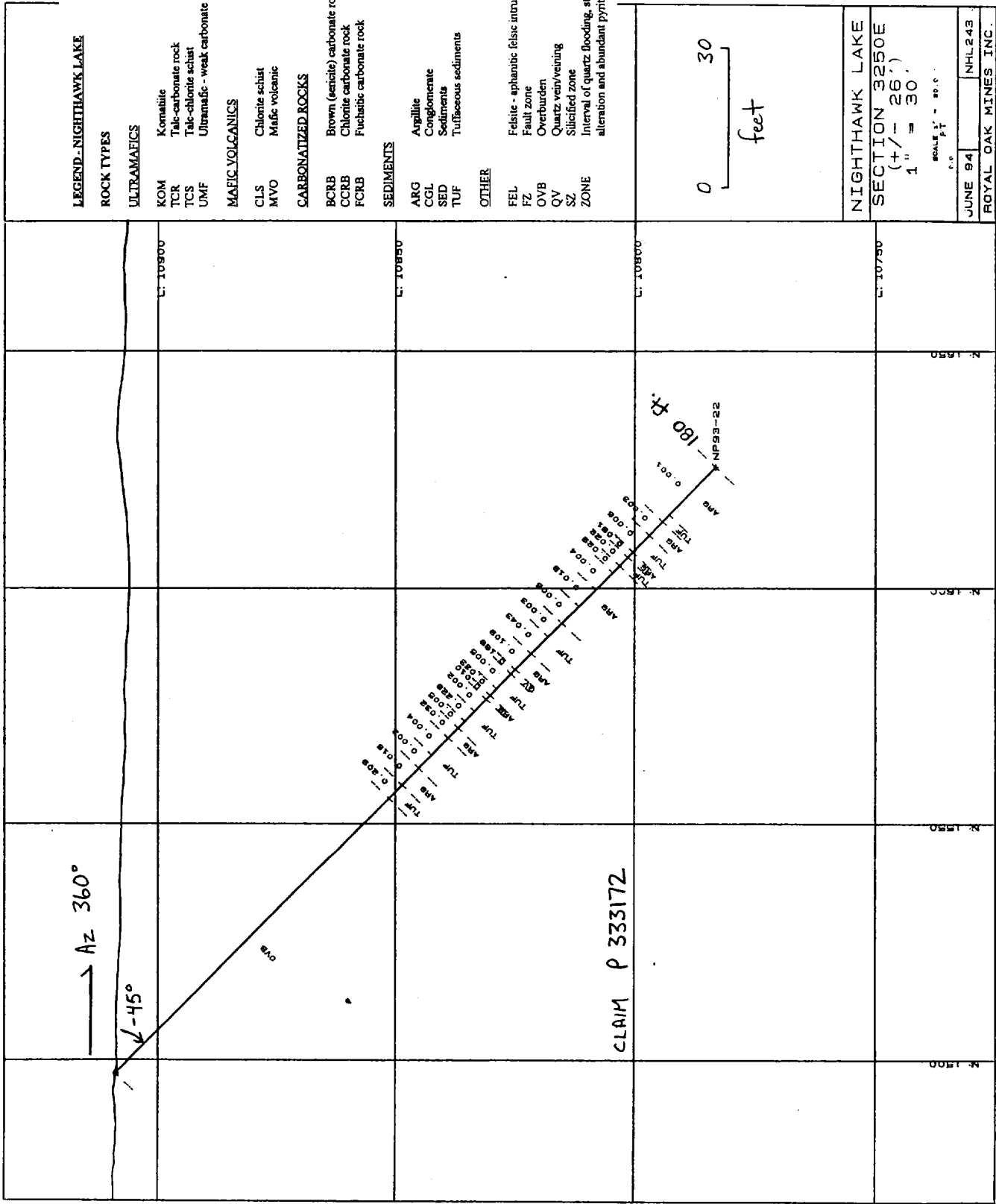
SCALE: 1" = 30'

DATE: 8.0

JUNE 94

NHL243

ROYAL OAK MINES INC.





**APPENDIX 2**  
**Drill Summary Logs**

## SUMMARY LOG

**Hole Number:** NP93-10  
**Date Drilled:** February 22-23, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P15603, HR918  
**Co-ordinates:** 1067.47N, 4199.51E, Elev. 926.3, Azimuth 360°, -45° dip  
**Length:** 220 feet  
**Casing:** 52.5 feet (BW) pulled and cemented  
**Purpose:** To test ramp zone near surface for potential open pit  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Entire hole intersected ultramafic stratigraphy with varying degrees of talc, chlorite, carbonate and silica alteration. Stratigraphy is strongly structured.

Intersected: 5.5% Qtz, 2% Py (0.11 opt Au/11.75') @ 138.25-150.0' in talc-chlorite rock and 15% Qtz, 2% ankerite and 2.5% Py (0.11 opt Au/18.5') @ 150.0-168.5' or 0.11 opt Au/30.25' @ 138.25-168.5' in brown carbonate rock.

### SAMPLING

83% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 17% of the hole (29') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=37). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**FOOTAGE****LITHOLOGY**

0.0- 53.5	<b>Overburden</b>
53.5- 58.0	<b>Talc Chlorite Schist</b> Protolith: peridotitic komatiite; local crenulation
58.0- 59.0	<b>Grey Carbonate Rock</b> Silicified + albitized
59.0- 68.0	<b>Talc-Carbonate Rock</b> Grey-black with buff/tan carbonate spotting/patches
68.0- 70.0	<b>Silicified Zone</b> Blocky; 15% Qtz and 1.5% Py (310 ppb Au/2.0')
70.0- 74.8	<b>Chloritic Carbonate Rock</b> Patches of silicification; o.c. marked by fault at 75°
74.8- 76.0	<b>Sediment or Foliated Talc-Chlorite Schist</b> Talc to scratch
76.8- 79.0	<b>Brown Carbonate Rock</b>
79.0- 83.0	<b>Silicified Zone</b> Protolith: grey altered ultramafic
83.0- 86.0	<b>Grey Carbonate Rock</b> Silicified and dirty-looking
86.0- 91.0	<b>Brown Carbonate Rock</b> Banding at 10°
91.0-103.0	<b>Fuchsitic Carbonate Rock</b> Dirtied by Mt speckling
103.0-109.0	<b>Talc Carbonate Rock</b>
109.0-136.0	<b>Chloritic Carbonate Rock</b> Grey-black due to variable streaking by chlorite/serpentine; structured
136.0-138.25	<b>Quartz Veins</b> Chlorite-talc associated

**FOOTAGE****LITHOLOGY**

138.25-150.0	<b>Talc Chlorite Rock</b> Streaked by weak sericite alteration on thin QV(s); variably silicified; 5.5% Qtz, 2% Py (0.11 opt Au/11.75')
150.0-191.0	<b>Mixed Brown Carbonate Rock (silicified) and Talc-Chlorite Rock</b> 15% Qtz, 2% Ank, 2.5% Py (0.11 opt Au/18.5') @ 150.0-168.5'
191.0-194.5	<b>Serpentinite</b>
194.5-212.5	<b>Brown Carbonate Rock</b> Mealy-texture; speckled by close-packed carbonate specks
212.5-216.5	<b>Fuchsitic Carbonate Rock</b>
216.5-220.0	<b>Quartz Vein</b> 90% Qtz, 5% Ank, tr Py in fuchsitic carbonate rock
220.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-11

**Date Drilled:** February 21-22, 1993

**Contractor:** Bradley Bros Ltd. (Timmins)

**Property:** North Pen - Ramp Zone (1602)

**Location:** Ramp Zone - Surface

**Township:** Cody

**Claim No.:** P15603, HR918

**Co-ordinates:** 1402.58N, 4101.28E, Elev. 912.8, Azimuth 180°, -45° dip

**Length:** 200 feet

**Casing:** 62 feet (BW) pulled and hole cemented

**Purpose:** To test updip potential of ramp zone for possible open pitting

**Logged by:** P. Coad

## **RESULTS**

### **GEOLOGY**

Hole collared in moderate to strongly sericitized tuff-sediment and then intersected package of carbonated and fuchsitic ultramafics with intervals of silicification (i.e. felsite) and associated crackle-brecciation and variable pyritization.

Intersected: 6% Qtz, 1.5% ankerite, 4% Py (0.077 opt Au/12.0') @ 167.0-179.0' in brown carbonate rock and 0.083 opt Au/2.8' @ 179.0-181.8' in a "silicified zone" or 0.078 opt Au/14.8' @ 167.0-181.8'.

### **SAMPLING**

78% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 22% of the hole (31') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=27). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### **CORE/REJECTS**

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

## RESULTS

### GEOLOGY

Hole collared in moderate to strongly sericitized tuff-sediment and then intersected package of carbonated and fuchsitic ultramafics with intervals of silicification (i.e. felsite) and associated crackle-brecciation and variable pyritization.

Intersected: 6% Qtz, 1.5% ankerite, 4% Py (0.077 opt Au/12.0') @ 167.0-179.0' in brown carbonate rock and 0.083 opt Au/2.8' @ 179.0-181.8' in a "silicified zone" or 0.078 opt Au/14.8' @ 167.0-181.8'.

### SAMPLING

78% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 22% of the hole (31') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=27). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.



**FOOTAGE****LITHOLOGY**

0.0- 62.0	<b>Overburden</b>
62.0- 85.5	<b>Tuff-Sediment</b> Moderate to strongly sericitized; alteration stronger next to QV's (s); local crenulation; trace green mica wisps
85.5-124.0	<b>Brown Carbonate Rock</b> Local thin felsite bands. Best 0.035 opt Au/7.5' @ 116.5-124.0' (1.5% Qtz + 1.5% Py)
124.0-149.0	<b>Fuchsitic Carbonate Rock</b> Strong green with local patches of buff/yellow sericitization (similar to Kerr Addison)
149.0-151.5	<b>Quartz Vein</b> Grey-black silicification/quartz veining; 75% Qtz, 3% Ank, 1.5% Py (0.033 opt Au/1.5')
151.5-155.0	<b>Fuchsitic Carbonate Rock</b> Minute magnetite speckling
155.0-163.0	<b>Grey Carbonate Rock</b> Local diffuse tourmaline
163.0-167.0	<b>Fuchsitic Carbonate Rock</b> Silicified + albitized; patches of buff silicification + py
167.0-179.0	<b>Brown Carbonate Rock</b> Silicified and sericitized with local fuchsite; 6% Qtz, 1.5% Ank, 4% Py (0.077 opt Au/12')
179.0-181.8	<b>Zone</b> Silicified buff-tan with crackle-brecciation; 2% Py (0.083 opt Au/2.8')
181.8-185.0	<b>Fuchsitic Carbonate Rock</b> 15% Qtz, 5% Ank, tr Py (0.032 opt Au/3.2')
185.0-187.6	<b>Silicified Zone</b> Glassy, aphanitic with crackle-brecciation; 4% Py (0.038 opt Au/2.6')
187.6-200.0	<b>Fuchsitic Carbonate Rock</b> Local matrix silicification
200.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-12

**Date Drilled:** February 23, 1993

**Contractor:** Bradley Bros Ltd. (Timmins)

**Property:** North Pen - Ramp Zone (1602)

**Location:** Ramp Zone - Surface

**Township:** Cody

**Claim No.:** P15603, HR918

**Co-ordinates:** 1153.75N, 4053.55E, Elev. 932.8, Azimuth 360°, -45° dip

**Length:** 230 feet

**Casing:** 43 feet (BW) pulled and hole cemented

**Purpose:** To test updip potential of ramp zone for possible open pitting

**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Entire hole intersected variably altered ultramafics (i.e. brown carbonate, grey carbonate and green carbonate or fuchsite-altered ultramafic rock). One felsite interval (198.0-211.0') was intersected.

Intersected: 0.046 opt Au/4.3' @ 43.0-47.5 in talc carbonated ultramafic  
0.049 opt Au/13.5' @ 47.5-61.0 in grey carbonate rock  
0.082 opt Au/3.75' @ 73.5-77.25 in brown carbonate rock  
0.044 opt Au/3.75' @ 77.25-81.0 in fuchsitic carbonate rock  
0.05 opt Au/5.0' @ 144.0-149.0 in grey carbonate rock  
0.032 opt Au/6.0' @ 149.0-155.0 in talc carbonate rock  
0.048 opt Au/13.0' @ 198.0-211.0 in felsite

or

0.048 opt Au/17.8' @ 43.0-61.0 and 0.063 opt Au/7.5' @ 73.5-81.0' and  
0.04 opt Au/11.0' @ 144.0-155.0 and 0.038 opt Au/25.0' @ 193.0-218.0

### SAMPLING

91% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 9% of the hole (16.5') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=41). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

<u>FOOTAGE</u>	<u>LITHOLOGY</u>
0.0- 43.0	<b>Overburden</b>
43.0- 47.5	<b>Talc Carbonated Ultramafic</b> Lacey Qtz-Ank-talc veins; moderately to strongly magnetic; 2.5% Qtz, 5% calcite (0.046 opt Au/4.3')
47.5- 61.0	<b>Grey Carbonate Rock</b> Dirtied by dark magnetite speckling; local heavy py + silicification in rock matrix; 14% Qtz, 9% Ank, 2% Py (0.049 opt Au/13.5')
61.0- 73.5	<b>Talc Carbonate Rock</b> Dark black-grey, moderately magnetic, strongly foliated
73.5- 77.25	<b>Brown Carbonate Rock</b> Silicified and weakly sericitized (lineated); two thin pinkish silicified bands with fine grained Py; 3% Qtz, 5% Ank, 1.5% Py (0.082 opt Au/3.75')
77.25- 81.0	<b>Fuchsitic Carbonate Rock</b> Weakly fuchsitic + silicified; local coarse pink leucoxene with pyrite; 20% Qtz, 2% Ank, 1.0% Py (0.044 opt Au/3.75')
81.0- 97.5	<b>Grey Carbonate Rock</b> Folded/lineated; lacey/banded Qtz/Ank veins
97.5-115.0	<b>Chlorite Schist</b> Light-medium green with yellow streaking as alteration haloes on boudinaged QV's. Protolith - schistose ultramafic?
115.0-137.6	<b>Brown Carbonate Rock</b> Mixed brown carbonate/talc-chloritic ultramafic - local yellow sericite alteration haloes on QV's
137.6-139.5	<b>Talc Carbonate Rock</b>
139.5-149.0	<b>Grey Carbonate Rock</b> Lacey Qtz-carb-talc veins, tan-offwhite bands are probably recrystallized QV's or thin felsite bands? Best: 0.05 opt Au/5.0' with 15% Qtz + 4% Py @ 144.0-149.0'
149.0-155.0	<b>Talc Carbonate Rock</b> 15% Qtz, 3% Py (0.032 opt Au/6.0')

**FOOTAGE****LITHOLOGY**

155.0-169.0	<b>Grey Carbonate Rock</b> Grey-green, talcose and carbonate spotted; local patches/bands of silicification (pink "tint")
169.0-182.7	<b>Brown Carbonate</b> Lineated and banded
182.7-198.0	<b>Fuchsitic Carbonate Rock</b> Strong emerald green; 3" patch of silicification + Py @ 196.0'
198.0-211.0	<b>Felsite</b> Aphanitic, siliceous, light whitish grey to buff; crackle-brecciated; green carbonated rock over lower portion of unit; 7% Qtz, 7% Py (0.048 opt Au/13.0')
211.0-220.4	<b>Fuchsitic Carbonate Rock</b> Local patches of felsite. Best: 3% Qtz, 1.5% Py (0.023 opt Au/9.4')
220.4-225.0	<b>Grey Carbonate Rock</b>
225.0-230.0	<b>Fuchsitic Carbonate Rock</b>
230.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-13

**Date Drilled:** February 24, 1993

**Contractor:** Bradley Bros Ltd. (Timmins)

**Property:** North Pen - Ramp Zone (1602)

**Location:** Ramp Zone - Surface

**Township:** Cody

**Claim No.:** P15603, HR918

**Co-ordinates:** 1210.63N, 4005.88E, Elev. 929.8, Azimuth 360°, -45° dip

**Length:** 230 feet

**Casing:** 32.8 feet (BW) pulled and hole cemented

**Purpose:** To test updip potential of ramp zone for possible open pitting

**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Entire hole intersected variably carbonated ultramafics with four separate intervals of felsite, the latter being spatially associated with fuchsite and/or grey carbonated ultramafic.

Intersected: 0.114 opt Au/4.5' @ 54.5-77.0 in grey carbonate rock  
0.11 opt Au/3.0' @ 77.0-80.0 in brown carbonate rock  
0.047 opt Au/5.0' @ 104.5-105.5 in grey carbonate rock  
0.079 opt Au/4.5' @ 159.0-163.5 in felsite  
0.091 opt Au/4.7' @ 167.3-172.0 in felsite  
0.029 opt Au/12.0' @ 172.0-184.0 in fuchsite carbonate rock  
0.046 opt Au/5.0' @ 184.0-189.0 in felsite

or

0.046 opt Au/21.7' @ 167.3-189.0

### SAMPLING

95% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 5% of the hole (9.9') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=45). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

<u>FOOTAGE</u>	<u>LITHOLOGY</u>
0.0- 32.8	<b>Overburden</b>
32.8- 36.0	<b>Brown Carbonate Rock</b>
36.0- 47.5	<b>Fuchsitic Carbonate Rock</b> Strong sericite alteration on rolling QV
47.5- 47.7	<b>Fault Zone</b>
47.7- 54.0	<b>Brown Carbonate Rock</b> Lineated, banded, tightly folded
54.0- 54.5	<b>Fault Zone</b> With 2" silicified band
54.5- 77.0	<b>Grey Carbonate Rock</b> Dirtied by grey specks/blotches (remnant Mt?); lacey Qtz-Ank veins (folded); local patches of silicified and f.g. pyrite. Best: 0.114 opt Au/4.5' @ 75.5-80.0, 5% Py associated
77.0- 80.0	<b>Brown Carbonate Rock</b> Possibly felsite in part; 15% Qtz, 2% Ank, 7% Py (0.11 opt Au/3.0')
80.0- 89.5	<b>Fuchsitic Carbonate Rock</b> QV's cut foliation (20-60°) at 50° to core axis; minor felsite patch
89.5-104.5	<b>Brown Carbonate Rock</b>
104.5-109.5	<b>Grey Carbonate Rock</b> Minor patches of silicification; local pink leucoxene with Py; 10% Qtz, 2% Py (0.047 opt Au/5.0')
109.5-111.0	<b>Talc Carbonate Rock</b>
111.0-125.0	<b>Brown Carbonate Rock</b> Folded "tiger-texture"
125.0-152.0	<b>Grey Carbonate Rock</b> Tectonized, banded, folded-broken Qtz "fragments"
152.0-154.0	<b>Fuchsitic Carbonate Rock</b>
154.0-159.0	<b>Grey Carbonate Rock</b> Weak fuchsite tint - definite patches of felsite



**FOOTAGE****LITHOLOGY**

159.0-163.5	<b>Felsite</b> Aphanitic, buff-white with pink tint; 2% Qtz, 3.5% Py (0.079 opt Au/4.5')
163.5-167.3	<b>Grey Carbonate Rock</b>
167.3-172.0	<b>Felsite</b> Local patches/fractures with brown tourmaline; 4% Qtz, 8% Py (0.091 opt Au/4.7')
172.0-184.0	<b>Fuchsitic Carbonate Rock</b> Approximately 40% felsite as patches and bands; 0.029 opt Au/12.0'
184.0-189.0	<b>Felsite</b> Light buff with weak pink tint; 4% Qtz, 5% Py (0.046 opt Au/5.0')
189.0-202.0	<b>Fuchsitic Carbonate Rock</b> 10% Qtz cut foliation @ 40-80°
202.0-218.0	<b>Brown Carbonate Rock</b> Weakly sericitic
218.0-224.3	<b>Fuchsitic Carbonate Rock</b>
224.3-228.0	<b>Felsite</b> Variably siliceous - lower portion more mafic-like with 0.5-1.5% dark grey "zits" (ultramafic?)
228.0-230.0	<b>Grey Carbonate Rock</b>
230.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-14  
**Date Drilled:** February 25-26, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P15603, HR918  
**Co-ordinates:** 1072.25N, 4249.51E, Elev. 924.5, Azimuth 360°, -45° dip  
**Length:** 151 feet  
**Casing:** 49 feet (BW) pulled and hole cemented  
**Purpose:** To test ramp zone near surface for potential open pit  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Entire hole intersected variably carbonated, silicified, sericitized (i.e. + fuchsite) ultramafic with at least three intervals of felsite or silicification and pyrite development.

Intersected: 0.044 opt Au/5.0' @ 79.0-84.0 in quartz vein/fuchsitic carbonate rock  
0.047 opt Au/11.0' @ 98.5-109.5 in talc chlorite rock  
0.058 opt Au/3.5' @ 109.5-113.0 in quartz vein  
0.415 opt Au/2.0' @ 113.0-115.0 in silicified brown carbonate rock  
0.479 opt Au/9.0' @ 115.0-124.0 in felsite  
0.029 opt Au/12.0' @ 172.0-184.0 in fuchsitic carbonate rock  
0.046 opt Au/5.0' @ 184.0-189.0 in felsite

or

0.23 opt Au/25.5' @ 98.5-124.0'

### SAMPLING

100% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish (n=29). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**FOOTAGE****LITHOLOGY**

0.0- 49.0	<b>Overburden</b>
49.0- 54.0	<b>Brown Carbonate Rock</b> Local faults slips @ 65°; folded quartz ankerite veins
54.0- 64.0	<b>Fuchsitic Carbonate Rock</b> Local dark, folded chloritic lamellae; banded, lineated, folded
64.0- 78.5	<b>Grey Carbonate Rock</b> Banded with chlorite/serpentine partings (folded); 0.5" gouge @ 74.5'
78.5- 79.0	<b>Fault Zone</b> Graphitic/brecciated quartz-rubble 2' grind
79.0- 84.0	<b>Quartz Vein - Fuchsitic Carbonate Rock</b> Approx. 5-10% graphitic rubble; 60% Qtz, 10% Ank, 2% Py (0.044 opt Au/5.0')
84.0- 86.5	<b>Fuchsitic Carbonate Rock</b> Folded
86.5- 88.0	<b>Talc Chlorite Serpentinized Rock</b> Rubbly, pitted core, finely carbonate speckled
88.0- 92.0	<b>Felsite</b> Aphanitic, siliceous, grey-buff with local TCR + QV's. Aphanitic pyrite-wash
92.0-109.5	<b>Talc Chlorite Rock</b> Approx. 5-10% buff-siliceous bands (felsite?); structured; 14% Qtz, 3% Ank, 0.7% Py (0.047 opt Au/11.0')
109.5-113.0	<b>Quartz Vein</b> Dirtied by folded inclusions of green serpentinite; 95% Qtz, 1.5% Ank, 2.5% Py (0.058 opt Au/3.5')
113.0-115.0	<b>Zone</b> Silicified-pyritic brown carbonate rock; 5% Qtz, 10% Ank, 5% Py (0.415 opt Au/2.0')

**FOOTAGE****LITHOLOGY**

115.0-124.0	<b>Felsite</b> Grey-buff, silicified, crackle-brecciated; pink leucoxene near pyrite crystals; local mauve tint; 5% Qtz, 8% Py (0.479 opt Au/9.0') 0.23 opt Au/25.5' @ 98.5-124.0
124.0-128.5	<b>Brown Carbonate Rock</b> Ribbony/brecciated texture
128.5-132.0	<b>Grey Carbonate Rock</b> Lacey Qtz/ank veins; patches of silicification and fine grained Py
132.0-151.0	<b>Brown Carbonate Rock</b> Ribbony, banded and tectonized
151.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-15  
**Date Drilled:** February 20-21, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P15603, HR918  
**Co-ordinates:** 1332.65N, 3701.89E, Elev. 925.0, Azimuth 360°, -45° dip  
**Length:** 151 feet  
**Casing:** 49 feet (BW) pulled and hole cemented  
**Purpose:** To test ramp zone near surface for potential open pit  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Hole collared in variably altered ultramafics [i.e. brown carbonate and fuchsitic (i.e. sericite and silicification) altered]. One zone of silicification and pyritization within a "fuchsitic carbonate rock" package occurs at 83.2-87.5', just south of the ultramafic/sediment contact and a second zone (121.0-124.5') occurs on the actual contact.

Intersected: 0.19 opt Au/4.3' @ 83.2-87.5 in silicified zone  
0.063 opt Au/13.5' @ 87.5-101.0 in fuchsitic carbonate rock  
0.058 opt Au/3.6' @ 115.0-118.6 in brown carbonate rock  
0.065 opt Au/3.5' @ 121.0-124.5 in silicified zone  
0.072 opt Au/9.5' @ 124.5-134.0 in sediment

### SAMPLING

83% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 17% of the hole (17.0') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=22). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

<u>FOOTAGE</u>	<u>LITHOLOGY</u>
0.0- 49.0	<b>Overburden</b>
49.0- 51.3	<b>Brown Carbonate Rock</b> Foliated; protolith = bas. kom. or Mg.-Thol; o.c. 1" gouge @ 68°
51.3- 83.2	<b>Fuchsitic Carbonate Rock</b> Minor delicate carbonaceous fractures; lacey quartz-ankerite veins (folded); late tensional veins, also folded; 7% Qtz, 2.5% Ank, 1% Py (0.027 opt Au/31.9')
83.2- 87.5	<b>Zone</b> Bleached/buff, aphanitic, "grainy" patches/zones in fuchsitic carbonate rock; vfg pyrite wash; 0.5' lost core at out-contact area; 7% Qtz, 2% Ank, 5% Py (0.19 opt Au/4.3')
87.5-101.0	<b>Fuchsitic Carbonate Rock</b> Minor, thin schistose carbonaceous partings; 16% Qtz, 5% Ank, 1% Py (0.063 opt Au/13.5')
101.0-118.6	<b>Brown Carbonate Rock</b> Protolith - peridotitic komatiite; local ribbons of aphanitic silic. Fine grained Py associated. Best: 0.058 opt Au/3.6' with 2% Qtz and 3% Py at 115.0-118.6'
118.6-121.0	<b>Ultramafic</b> Aphanitic, grey-mauve - possibly chilled margin of above ultramafic
121.0-124.5	<b>Zone</b> Bleached, buff, aphanitic, siliceous; 1.5% Qtz, 1% ankerite, 3% Py (0.065 opt Au/3.5'); 1.5% Qtz, 1% Ank, 3% Py (0.065 opt Au/3.5')
124.5-151.0	<b>Sediment</b> Variably carbonated, sericitized and crenulated; weakly argillaceous over o.c. area; 0.5" gouge @ 140' (30°). Best: 0.072 opt au/9.5' with 2% Qtz, 0.5% Ank and 2% Py from 124.5-134.0'
151.0	<b>EOH</b>



## SUMMARY LOG

**Hole Number:** NP93-16  
**Date Drilled:** February 21-22, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P15603 (HR918) & P333172  
**Co-ordinates:** 1339.4N, 3602.12E, Elev. 923.39, Azimuth 360°, -45° dip  
**Length:** 161 feet  
**Casing:** 49 feet (BW) pulled and hole cemented  
**Purpose:** To test near surface potential of ramp zone  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Hole intersected an altered ultramafic package in shear contact with a sediment package. The contact area is marked by a 34 feet wide (along the core) "conglomerate" zone, which consists of mafic, ultramafic and felsite "clasts". It is quite possible that this is a "pseudo-clastic" developed in response to extreme tectonic shearing and dragging along the volcanic/sediment contact. One felsite zone (i.e. 75.5-80.0') occurs on the north margin of the altered ultramafic stratigraphy.

Intersected: 0.066 opt Au/15.5' @ 60.0-75.5 in grey carbonate rock  
0.20 opt Au/5.0' @ 75.5-80.5 in felsite  
0.067 opt Au/5.5' @ 80.5-86.0' in "conglomerate"

or

0.092 opt Au/26.0' @ 60.0-86.0'

### SAMPLING

54% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 46% of the hole (52.0') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish. Total specimens (n=17). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

<u>FOOTAGE</u>	<u>LITHOLOGY</u>
0.0- 49.0	<b>Overburden</b>
49.0- 52.5	<b>Fuchsitic Carbonate Rock</b>
52.5- 58.0	<b>Brown Carbonate Rock</b>
58.0- 75.5	<b>Grey Carbonate Rock</b> Sericitized/silicified ultramafic. Tan-silic. bands. 1% Qtz, 1% Py (0.066 opt Au/15.5' @ 60.0-75.5')
75.5- 80.0	<b>Felsite</b> Buff-mauve, aphanitic @ 75.5-76.5'; 1% Qtz, 1.5% Py (0.20 opt Au/5.0') <u>or</u> 0.092 opt Au/26.0' @ 60.0-86.0'
80.0-114.8	<b>"Conglomerate"</b> Sheared, banded, ribbony texture. Mafic (buff-mauve), ultramafic and possible felsite clasts (?); local mega-kinking. Possibly tectonic breccia? Best: 0.067 opt Au/5.5' @ 80.5-86.0' (8% Qtz, 1% Py)
114.8-129.7	<b>Argillite</b> Folded strike and tension Qtz veins; very weakly conductive
129.7-134.5	<b>Tuff/Sediment</b> F <sub>1</sub> foliation oblique to bedding
134.5-136.0	<b>Quartz Vein</b>
136.0-154.5	<b>Tuff</b> Weak-moderate sericite alteration
154.5-161.0	<b>Argillite</b> Very weakly sericitic
161.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-17

**Date Drilled:** February 22-23, 1993

**Contractor:** Bradley Bros Ltd. (Timmins)

**Property:** North Pen - Ramp Zone (1602)

**Location:** Ramp Zone - Surface

**Township:** Cody

**Claim No.:** P15603 (HR918) & P333172

**Co-ordinates:** 1332.99N, 3499.87E, Elev. 915.6, Azimuth 360°, -45° dip

**Length:** 200 feet

**Casing:** 62.3 feet (BW) pulled and hole cemented

**Purpose:** To test updip potential of ramp zone

**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Hole intersected variably altered ultramafic in fault contact with sediments. Local bands of silicification with pyrite (i.e. felseite) occur within the brown carbonate and fuchsitic ultramafic.

Intersected: 0.035 opt Au/4.0' @ 67.0-71.0 in brown carbonate rock  
0.035 opt Au/9.8' @ 71.0-80.8 in fuchsitic carbonate rock  
0.017 opt Au/19.2' @ 80.8-100.0' in brown carbonate rock  
0.208 opt Au/5.0' @ 100.0-105.0' in tuff or structured mafic

or

0.128 opt Au/38.0' @ 67.0-105.0'

### SAMPLING

60% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 40% of the hole (55.3') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish (total specimens n=25). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**FOOTAGE****LITHOLOGY**

0.0- 62.3	<b>Overburden</b>
62.3- 71.0	<b>Brown Carbonate Rock</b> Schistose, banded and dirtied by magnetite speckling. Best: 0.035 opt Au/4.0' @ 67.0-71.0'
71.0- 80.8	<b>Fuchsitic Carbonate Rock</b> Patches of buff/silic. with very fine grained pyrite; 0.035 opt Au/9.8' (6.5% Qtz, 2% Py associated)
80.8-100.0	<b>Brown Carbonate Rock</b> Variable matrix silicification + sericitization; local bands of buff silicification (i.e. felsite); section may have historically been logged as sericite schist; 0.17 opt Au/19.1' with 5% Qtz and 2% Py
100.0-112.9	<b>Tuff or Structured Altered Mafic Volcanics</b> Best: 0.208 opt Au/5.0' @ 100.0-105.0' <u>or</u> 0.128 opt Au/38.0' @ 67.0-105.0'
112.9-115.0	<b>Fault Zone</b> Rubbly with 1.2" of gouge (host = argillite)
115.0-118.5	<b>Argillite</b> Highly folded - plunge at 40° (?)
118.5-173.0	<b>Tuff</b> Possibly sheared mafic volcanic?
173.0-174.0	<b>Quartz Vein</b> Blebs of cp in this strike vein (25° to c.a.)
174.0-183.0	<b>Tuff</b>
183.0-191.3	<b>Argillite</b>
191.3-194.0	<b>Tuff</b>
194.0-200.0	<b>Argillite</b>
200.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-18  
**Date Drilled:** February 23-24, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P15603 (HR918) & P333172  
**Co-ordinates:** 1376.47N, 3399.89E, Elev. 914.4, Azimuth 360°, -45° dip  
**Length:** 170 feet  
**Casing:** 105 feet (BW) pulled and hole cemented  
**Purpose:** To test updip extension of ramp zone for open pit potential  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Hole intersected a major depression in the topography (i.e. 105' of casing) and therefore missed the primary target. Variably altered ultramafics were intersected in the hole, along with a mafic volcanic or lamprophyre dike at 162.0-167.0'.

Intersected: 0.044 opt Au/6.5' @ 128.0-134.5'in brown carbonate rock  
0.146 opt Au/3.0' @ 167.0-170.0 in brown carbonate rock (aphanitic and siliceous)

### SAMPLING

63% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish and 37% of the hole (24.0') was grabbed, with "buttons" of core selected over a specified interval for fire assaying and A.A. finish (total specimens n=11). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.



<u>FOOTAGE</u>	<u>LITHOLOGY</u>
0.0-105.0	<b>Overburden</b>
105.0-128.0	<b>Talc-Carbonate Rock</b> 3' of grind at 124.0'
128.0-134.5	<b>Brown Carbonate Rock</b> Silicified and aphanitic with crackle-brecciation; tightly folded QV's; 0.044 opt Au/6.5' with 4% Qtz and 5% Py
134.5-139.5	<b>Grey Carbonate Rock</b>
139.5-140.5	<b>Fault Zone</b> Possible pieces of lamp?
140.5-157.0	<b>Grey Carbonate Rock</b> Locally siliceous with buff-pink tint
157.0-162.0	<b>Brown Carbonate Rock</b> Silicified and weakly sericitized
162.0-167.0	<b>Mafic Volcanic or Lamprophyre Dike</b>
167.0-170.0	<b>Brown Carbonate Rock</b> Aphanitic and siliceous. Protolith: mafic intrusive or volcanic? 0.146 opt Au/3.0' with 5% Qtz and 4% Py associated
170.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-21  
**Date Drilled:** February 24-25, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P333172  
**Co-ordinates:** 1471.38N, 3301.67E, Elev. 910.6, Azimuth 360°, -45° dip  
**Length:** 185 feet  
**Casing:** 82 feet (BW) pulled and hole cemented  
**Purpose:** To test updip potential of ramp zone  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Hole collared in tuff and then intersected a faulted package of altered ultramafics in fault contact with sediments.

Intersected: 0.064 opt Au/10.5' @ 89.5-100.0'in brown carbonate rock  
0.282 opt Au/3.95' @ 111.3-115.25' in fault zone  
0.12 opt Au/20.45' @ 115.25-135.7' in brown carbonate rock  
0.059 opt Au/14.0' @ 145.0-159.0' in argillite

### SAMPLING

100% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish (total specimens n=21). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**FOOTAGE****LITHOLOGY**

0.0- 82.0	<b>Overburden</b>
82.0- 89.5	<b>Tuff</b> Possibly foliated fine grained MVO?
89.5-111.3	<b>Brown Carbonate Rock</b> Possibly in part foliated felsite? Silicified. Lineated/kinked. Best: 0.064 opt Au/10.5' @ 89.5-100.0'
111.3-115.25	<b>Fault Zone</b> 0.282 opt Au/3.95'
115.25-135.7	<b>Brown Carbonate Rock</b> Silicified and sericitized; local thin felsite bands; 3" fault rubble @ 127'; 0.12 opt Au/20.45' with 2% Py associated
135.7-145.0	<b>Fault Zone</b> Interval represented by 3.3' of lost core; 0.022 opt Au/9.3'
145.0-185.0	<b>Argillite</b> Highly dragfolded, discs and blocky. Best: 0.059 opt Au/14.0' @ 145.0-159.0' with 5% Qtz and 1.7% Py <u>or</u> 0.097 opt Au/47.7' @ 111.3-159.0' with 6' of grind associated @ 135.7-145.0'
185.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-22

**Date Drilled:** February 24-25, 1993

**Contractor:** Bradley Bros Ltd. (Timmins)

**Property:** North Pen - Ramp Zone (1602)

**Location:** Ramp Zone - Surface

**Township:** Cody

**Claim No.:** P333172

**Co-ordinates:** 1497.16N, 3250.09E, Elev. 909.1, Azimuth 360°, -45° dip

**Length:** 180 feet

**Casing:** 82 feet (BW) pulled and hole cemented

**Purpose:** To test updip potential of ramp zone near surface

**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Entire hole intersected tuff-sediment package. Highly structured. Tuff is moderately to locally strongly sericitized with local green mica "wisps". Alteration strongest adjacent to quartz veins.

Intersected: 0.209 opt Au/4.0' @ 82.0-86.0' in tuff  
0.032 opt Au/3.0' @ 100.0-103.0' in argillite  
0.228 opt Au/3.0' @ 105.0-108.0' tuff  
0.189 opt Au/1.3' @ 119.0-120.3' in quartz vein  
0.109 opt Au/4.7' @ 120.3-125.0' in argillite/tuff  
0.043 opt Au/5.0' @ 125.0-130.0' in tuff/sericite schist  
0.061 opt Au/1.5' @ 153.5-155.0' in argillite

or

0.089 opt Au/11.0' @ 119.0-130.0'

### SAMPLING

100% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish (total specimens n=27). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**FOOTAGE****LITHOLOGY**

0.0- 82.0	<b>Overburden</b>
82.0- 86.0	<b>Tuff</b> Foliated and "disced"; patches of silicification; 0.209 opt Au/4.0' with 1.5% Qtz and 0.5% Py
86.0- 91.0	<b>Argillite</b> Approx. 30% sericitic tuff/sediment. RQD = 0
91.0-100.0	<b>Tuff</b> Moderately sericitized with green mica wisps; rubbly "checkered" core
100.0-103.0	<b>Argillite</b> 0.032 opt Au/3.0' with 15% Qtz and 0.4% Py
103.0-111.5	<b>Tuff</b> Lineated and kinked; weak-moderately sericitic; stronger next to QV's. Best: 0.228 opt Au/3.0' @ 105.0-108.0' (4% Qtz + 3.5% Py)
111.5-112.0	<b>Argillite</b> Streaked by yellow sericite/Qtz
112.0-119.0	<b>Tuff</b> 10-20% argillite partings; historically may have been called sericite schist; 0.033 opt Au/1.9' @ 112.7-114.6' (2.5% Qtz + 0.5% Py)
119.0-120.3	<b>Quartz Vein</b> 0.189 opt Au/1.3' (25% Qtz + 4.5% Py)
120.3-125.0	<b>Argillite</b> Mixed with "sericitic tuff" bands spatially related to QV's. Felsite-looking band near in-contact. Possibly many felsite bands which are tectonized - look like Qtz/alteration halos; 0.109 opt Au/4.7' (15% Qtz + 0.5% Py)
125.0-134.0	<b>Tuff/Sericite Schist</b> Possibly tectonized felsite, i.e. patches of silicification + crackle-brecciation. Best: 0.043 opt Au/5.0' (2% Qtz, 1.5% Ank, 0.4% Py) or 0.089 opt Au/11.0' @ 119.0-130.0'
134.0-151.0	<b>Argillite</b> Graphitic (non-conductive). Fault Zone Area - similar to Owl Creek; boudinaged/folded QV

**FOOTAGE****LITHOLOGY**

151.0-153.5	<b>Tuff</b> Weakly sericitized; stronger next to QV's; kinking evident
153.5-155.0	<b>Argillite</b> Graphitic with m.g. Py; 0.061 opt Au/1.5' (0.5% Py, 2% Ank, 2% Py)
155.0-160.0	<b>Tuff</b>
160.0-164.0	<b>Argillite</b>
164.0-166.0	<b>Tuff</b> Weak-moderately sericitic
166.0-180.0	<b>Argillite</b> Locally "lightened" by weak sericite alteration; chevron folds evident
180.0	<b>EOH</b>



## SUMMARY LOG

**Hole Number:** NP93-23  
**Date Drilled:** February 25, 1993  
**Contractor:** Bradley Bros Ltd. (Timmins)  
**Property:** North Pen - Ramp Zone (1602)  
**Location:** Ramp Zone - Surface  
**Township:** Cody  
**Claim No.:** P15603, HR918  
**Co-ordinates:** 1075.79N, 4350.69E, Elev. 925.4, Azimuth 360°, -55° dip  
**Length:** 121 feet  
**Casing:** 42.7 feet (BW) pulled and hole cemented  
**Purpose:** To test updip potential of ramp zone  
**Logged by:** P. Coad

## RESULTS

### GEOLOGY

Entire hole intersected variably altered ultramafics. Three intervals of felsite were intersected, the zones being spatially associated with fuchsitic and/or grey carbonated ultramafic (i.e. silicification + albitization + potassium).

Intersected: 0.031 opt Au/5.0' @ 65.5-70.5' in fuchsitic carbonate rock  
0.048 opt Au/3.75' @ 70.5-74.25' in felsite  
0.007 opt Au/1.65' @ 74.25-75.9' in QV  
0.061 opt Au/3.7' @ 75.9-79.6' in felsite

or

0.041 opt Au/14.1' @ 65.5-79.6'

### SAMPLING

100% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish (total specimens n=20). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### CORE/REJECTS

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**FOOTAGE****LITHOLOGY**

0.0- 42.7	<b>Overburden</b>
42.7- 56.0	<b>Brown Carbonate Rock</b>
56.0- 70.5	<b>Fuchsitic Carbonate Rock</b> Lacey Qtz-Ank veining cut by 45° Qtz-Ank which are weakly crenulated. Best: 0.031 opt Au/5.0' @ 65.5-70.5'
70.5- 74.25	<b>Felsite</b> Grey-buff with vfg-mg Py crystals (striated faces); 0.048 opt Au/3.75' with 0.5% Qtz, 0.5% Ank and 3% Py
74.25-75.9	<b>Quartz Vein</b> 0.007 opt Au/1.65' (50% Qtz, 10% Ank and tr Py)
75.9- 79.6	<b>Felsite</b> Local 1/2 cm wide semi-massive pyrite bands; 0.061 opt Au/3.7' (1.5% Qtz, 0.5% and 4% Py) <u>or</u> 0.041 opt Au/14.1' @ 65.5-79.6'
79.6-107.0	<b>Grey Carbonate Rock</b> Banded and lineated; local thin felsite bands
107.0-121.0	<b>Talc Chlorite Rock</b> Banded and lineated; mod. chloritic and crenulated
121.0	<b>EOH</b>

## SUMMARY LOG

**Hole Number:** NP93-24

**Date Drilled:** February 25, 1993

**Contractor:** Bradley Bros Ltd. (Timmins)

**Property:** North Pen - Ramp Zone (1602)

**Location:** Ramp Zone - Surface

**Township:** Cody

**Claim No.:** P15603

**Co-ordinates:** 1075.79N, 4350.69E, Elev. 925.4, Azimuth 360°, -75° dip

**Length:** 170 feet

**Casing:** 32.8 feet (BW) pulled and hole cemented

**Purpose:** To test ramp zone updip for potential open pit

**Logged by:** P. Coad

## **RESULTS**

### **GEOLOGY**

Entire hole intersected variably altered ultramafic with a 2.0' intervals of felsite @ 113.0-115.0'.

Intersected: 0.031 opt Au/25.0' @ 90.0-115.0' in fuchsitic ultramafic  
0.013 opt Au/2.0' @ 113.0-115.0' in felsite  
0.035 opt Au/4.0' @ 166.0-170.0' in grey carbonate rock

### **SAMPLING**

100% of the hole was sawed and fire assayed for gold (1AT ) with an atomic absorption finish (total specimens n=31). All pulps and rejects are saved for future reference. Analytical work performed by Royal Oak Mines Inc. assay laboratory in Schumacher, Ontario.

### **CORE/REJECTS**

Drill core and rejects are stored at Royal Oak Mines Timmins core processing facility on the Hollinger Mine Property.

**APPENDIX 3**  
**Drill Logs & Assay Certificates**

*PC CARD*

PROJECT: NR - RAMP ZONE Logged By: PCWAD  
(COPY TO (S) 143 Core Casing (15603, 14918))

DRILL HOLE: NP93-10  
NORTHING: 1067.47N  
EASTING: 4199.51E  
ELEVATION: 926.50  
LENGTH: 220  
OBI: \_\_\_\_\_ OBE: \_\_\_\_\_ INC: \_\_\_\_\_ LEASE: \_\_\_\_\_

DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP
0	360	-45												
220		-46												

(CORE STORED: Hillinger Core Shack Schumacher, Davenport)  
Drilled by: Bradley Bras (Timmins)

DIST	ID	ROCK DESCRIPTION			STRUCT B/S J/F	GANGUE			MINERALS			SPL #	Width	T	COMMENTS 1	COMMENTS 2
		Com	Gr	Text		Air	Co	Norm	AZ	BZ	CZ					
53.5																
58.0	SS	kg	gls	ICS	F60	072 DS		CAZ 25	Pd 0.4					1318		Overburden Talc Chlorite Schist - Probable Peridotitic Metacarbonate - green-black with thin yellow casts. Vegetable root waxy speckling Patch (partially laminarized) of silicate Py near in-ET; local cement in unit
59.0		kg	gls	BY SIL SCRB		072 30			Pd 30					1319	1.0	Grey Carbonate Rock Silicified & etched, ophiolite found pockets with vfg. Py; o.c. sharp 65.
66.0	SS	Aug	gls	TCR	F60	072 Z MK 10			Pd 10					1320		Talc - Carbonated Rock (ultramafic) Green-black with buff iron carbonate speckling / streaked patches / bands
68.0		"	"	TCR	F50	072 S MK 10								1321		As above - light staining; rusty core.
70.0	SS	Aug	gls	SIL SZ (silt sand)		072 IS			Pd 15					1322		Silicified zone - Probable ss sample contained ultramafic; fract with chl scapt; stinky core; flat rolling slip.
74.4	SS	Aug	gls	SIL CRB	F60	072 10			Pd 10					1323		Chloritic Carbonate Rk Ultramafic which is carbonate / chloritic Talc with patches of siliceous vfg. Py Evidence of broken white Qtz, stinky

DIST	ROCK QUALITY				ASSAY DATA									
	Recl	Pc	Pcs1	Rq Re%	Spl #	Width	TL	TL	TL	TL	TL	TL	TL	
SZS								027	PP2					
58					1318	1023		103						
58					1319	2001		70						
650					1320	1001		55						
680					1321	1001		55						
700					1322	1001		510						
720					1323	1001		70						



DIST	ID	ROCK DESCRIPTION			STRUCT.		MINERALS					COMMENTS 1	COMMENTS 2			
		Com	Gr	Text	Co	Air	Mem	B	A	U	A			G	C	Z
76.0		Ss	Fg	lma	gy			ORL 10	Gr 20	Py 10						SEDIMENT OR Foliated Calc. - schist (ie. Fe-gy. ultramafic - hornblende / hornblende). Probably structurally ultramafic. Taken scratch test Brown Carbonate Rock - silicified and varised by Qtz
74.0		SS	Fg					ORL 35	AmK 5	Py 10						Silic. Zone - Grey - white and silicified Potash - grey altered carbonated ultramafic. white of flaked silic. altered epithermal matrix. some delicate fractures with dk chl / serpentine. local flat points + blocky carb.
83.0			Fg					ORL 30	AmK 5	Py 0.5						Grey Carbonate Rock Silicified + dirty-looking - cut by late leucog white gnl's; late AVC 25.
86.0			Fg					ORL 20	AmK 5	Py 0.4						Brown Carbonate Rock Buff - green with v weak sericite. Silicified as ash; note banding @ 10.
91.0			Fg					ORL 7	AmK 3	Py 10						Ferrosilic Carbonate Rock Weak - med. lustrous dirty matrix. Is. silicified and cut by leucog gnl's. carb. obliterated by py in speckling. Hg-gy. alteration @ 20. O.C. P. 105 weathered by visible. Late Carbonate Rck (grey with local rusty limonite patches, spots. leucog dark veins + spots (leucog veins); local pale green calc patches.
95.0			Fg					ORL 10	AmK 5	Py 10						
100.0			Fg					ORL 35	AmK 10	Py 11.5						
103.0			SS	u	fold	u	u	"	"	Py 10						
106.0			S	Fg				ORL 3	AmK 10	Py 10						

ROCK QUALITY				ASSAY DATA							
DIST	Recl	Pc	Pcs1	Rq	Re%	Spl #	Width	T	Au	Prc	Pcs
76.0						1324			.002		70
79.0						1325			.003		105
82.0						1326			.001		35
86.0						1327			.003		105
91.0						1328			.012		410
95						1329			.001		35
101						1330			.001		35
103						1331			.020		685
106						1332			.002		70



DIST	ROCK QUALITY				ASSAY DATA					
	Recl	Pc	Pcal	Rq	Re%	Spl #	Width	T	Au	Ax
109						1333			.011	.001
114						1337			.008	.235
120						1335			.009	.205
123						1336			.005	.120
130						1337			.003	.105
136						1338			.006	.135
138.25						1339			.018	.615
141						1340	2.75		.167	
144						1341	3.0		.258	
150						1347	6.0		.011	.375
153						1348	5.0		.050	.170
157.0						1344	4.0		.142	
160.0						45	3.0		.009	.310
164.0						46	4.0		.019	.650
168.5						1347	4.5		.285	

0112 / 30.25





ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: MARCH 3/93

HOLE # NP 93-10

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D 1318	.003	105				
2	19	.002	70				
3	20	.001	35				
4	21	.001	35				
5	22	.009	310				
6	23	.002	70				
7	24	.002	70				
8	25	.003	105				
9	26	.001	35				
10	27	.003	105				
11	28	.012	410				
12	29	.001	35				
13	30	.001	35				
14	31	.020	685				
15	32	.002	70				
16	33	.001	35				
17	34	.008	275				
18	35	.006	205				
19	36	.005	170				
20	37	.003	105				
21	38	.004	135				
22	39	.018	615				
23	40	.167	-				
24	D 13 41	.258	-				

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: MARCH 3/93

HOLE # NP-93-10

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D 1342	.011	375				
2	43	.050	1710				
3	44	.142	-				
4	45	.009	310				
5	46	.019	650				
6	47	.285	-				
7	48	.003	105				
8	49	.001	35				
9	50	.003	105				
10	51	.011	375				
11	52	.010	340				
12	53	.003	105				
13	D 1354	.010	340				
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							



ROYAL OAK  
MINES INC.

PROJECT: NHL - RAMP ZONE  
(Cody Twp, Sections 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40)

Logged By: T. COVAD  
P.15603, H.9103

*T. COVAD*

Date: 2-21-1993  
Page 1 of 4

DRILL HOLE: NP93-11  
NORTHING: 1402.58 N  
EASTING: 4101.28 E  
ELEVATION: 912.80  
LENGTH: 200'  
PAGE 1

INC: OBE DIST: OBI ORE: ORE

DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	COMMENTS 1	COMMENTS 2
0	180	-45											POTENTIAL OF RAMP ZONE ON 400E RESULTS: Intersects 07B opt av / 14B C 181-181B
61m		-42											CEMENT PLUG (20') and CASING ROLLED START: FEB 21, 1993 FINISH: FEB 22, 1993 OR

Core stored: Hollinger site CORE SHACK  
DRILLED BY: BANDLEY BOSS (TUMMINIS)

DIST	Id	Com	Grs	Test	Co	Alt	Nom	ROCK DESCRIPTION	STRUCT.	MINERALS				Spt #	Width	T	
										GANGUE		METALLIC					
		B	A	J	A	J	A	J	A	J	A	J	A	J	A	J	
62.0								SS	F40								Chert nodules
67.0		SS	F46	hard	Y/L	SEA	TUF						1291	5.0			TUFFaceous - SEMINANT
72.0		"	"	"	"	"	"						1292	5.0			Hard - strongly fissile red; fissile at location shales next to sandstone green shale veins. Vfa pyritous - calc. 10%
77.0		SS	"	hard	Y/L	SEA	TUF		F40				1293	5.0			Local chert nodules / calcification yellow - gang calcene
80.5		SS							F40				1294				Crustal iron nodules
84.0		SS		hard	Y/L	SEA	TUF		F40				1295				Brownish grey Shale vein (S) dirty with sericite inclusions. Fg - aug. py
88.5		SSS		"	Y/L	SEA	TUF		F40				1296				to 100 in av. 0V Loc. possibly minor ore 0.5. Shale C. 40'
116.5		SS	F46	hard	Y/L	SEA	B2B		F40				1297*				BROWN CARBONATE ROCK Brown - green due to carbonates and local blue sericite inclusions. Ser. silt is shaly next to minor quartz veining Local chert - nodules / banded discarded. possibly thin "fossil" bands Brown carbonate rock - thin siliceous Mass fragment thin but fossiliferous
124.0		SS	F46	hard	Y/L	SEA	Y/L		F40				1298				

DIST	ROCK QUALITY			ASSAY DATA						
	Recl	Pc	Pcs	Rq	Re%	Spl #	Width	IT	A	gpb
62									0.02	
67						1291	5.0		0.05	515
72						1292	5.0		0.03	105
77						1293	5.0		0.11	315
88						1294	3.5		0.02	170
84						1295	3.5		0.23	190
85						1296	1.5		0.04	135
116						1297	3.0		0.06	170
124						1298	7.5		0.35	1700

ROYAL OAK  
MINES INC.

DIST	Id	ROCK DESCRIPTION					STRUCT.											
		Com	Gr	Test	Co	Alt	Norm	B	A	J	A <sub>2</sub>							
1280		S	FMG		gy													
1330		S	FMG		gy													
1380		S	FMG		gy													
1450		S	FMG		gy													
1490		S	"		gy													
1515																		
1550																		
1600																		

MINERALS									
GANGUE				METALLIC				OTHER	
Qz	Cz	Bz	Cz	Dz	Ez	Az	Fz	Spl #	With T
Qz 10	MK 25							1299	
Qz 10	MK 25							1300	
Qz 10	MK 40							1301	
Qz 2	MK 40							1302	
Qz 25	MK 17							1303	
Qz 75	MK 30	CAL 30						1304	
Qz 30	MK 15							1305	
Qz 5	MK 10	CAL 20						1306	

COMMENTS 1	COMMENTS 2
FUCHSITIC (MORBANITE) ROCK Weakly fuchsite, probably siliceous fuchsite, lesser Qz/Pk veins, minor "buff" siliceous patches in matrix	
Fuchsite Crs. Rock J. strongly fuch. - some of green matrix lesser Qz - pink veining	
Ms. coarse but - coarse sil. - some buff/yell fuchsite patches - possibly altered siliceous rock. v. f. is sp. highly associated with fuch. patches, MS sil. Qz/Pk veins cutting through green Crs + siliceous rock patches. possibly simple alteration / weathering - possible in patches Remnants / keen addition to stratigraphy.	
Fuch. Crs. Rock - weak fuchsite patches developed.	
Minor abundant black serpentine in veins (very Qz - pink)	
Green-black silicification / quartz veining with associated dark serpentine / chrysotile and possible tourmaline (epitaxial) in-ct (to sil) out-ct is secondary ? alteration including / serpentinization.	
Fuch. Crs. R. - in-ct out-ct siliceous - weakly siliceous / siliceous Green Crs. Rock - fuch. siliceous / siliceous	

DIST	ROCK QUALITY				ASSAY DATA				
	Recl	Pc	Pcs	Rq	Re%	SpI #	Width	HU	PTB
128						1299	4.0	.011	345
131						1300	5.0	.005	170
138						1301	5.0	.016	550
143						1302	5.0	.007	585
149						1303	6.0	.010	340
151.5						1304	2.5	.033	1130
155						1305	3.5	.014	480
160.0						1306	5.0	.027	925



DIST	ROCK QUALITY				AU ASSAY DATA				
	Rec1	Pc	Pcs1	Rq	Re%	Spl #	Width	OPT	PPB
163						1307	3.0	.011	315
169						1308	4.0	.018	615
171						1309	4.0	.073	2500
175						1310	4.0	.070	2400
179						1311	4.0	.087	2880
181						1312	2.5	.083	2850
185						1313	3.5	.032	2810
189.6						1314	2.6	.038	1300







ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-11

DATE: FEB. 26, 93

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D 1291	.015	515				
2	92	.003	105				
3	93	.011	375				
4	94	.021	720				
5	95	.023	790				
6	96	.004	135				
7	97	.006	205				
8	98	.035	1200				
9	12 99	.011	375				
10	1300	.005	170				
	01	.016	550				
12	02	.017	585				
13	03	.010	340				
14	04	.033	1130				
15	05	.014	480				
16	06	.027	925				
17	07	.011	375				
18	08	.018	615				
19	09	.073	2500				
20	10	.070	2400				
21	11	.087	2980				
22	12	.083	2850				
23	13	.032	2810				
24	D 13 14	.038	1300				

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-11

DATE: FEB 26/93

	SAMPLE NUMBER	Au oz/ton	Au ppb					
1	D1315	.019	650					
2	16	.020	685					
3	D1317	.013	445					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

PROJECT: NP (RAMP ZONE)  
 (CDX Twp, S1, T013, COWD, Lower PISOS, MR 918)

Logged By: P. CARD

*P. CARD*

Date: 02/23/1993  
 Page 1 of 2

DRILL HOLE: NP93-12  
 NORTHING: 1153.75N  
 EASTING: 4053.55E  
 ELEVATION: 932.80  
 LENGTH: 230'  
 OBI: \_\_\_\_\_ OBE: \_\_\_\_\_ INC: \_\_\_\_\_ LEASE: \_\_\_\_\_

DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP
0	340	-45									
230	AP	AP									

CORE STORED: Halliher Cove Shack (Schumacher Road)  
 DRILLED BY: Smedley Boak (Tommins)

DIST	Id	ROCK DESCRIPTION			B/S J/F		MINERALS			METALLIC				
		Com	Gr	Test	Co	Alt	Nam	A%	B%	C%	D%	E%	F%	
43.0														
49.5		S	FH6	Mott	gl	tbl	tbl							
51.0														
56.0														
61.0		SS	FH6	Mott	gl	sill	GRS							
66.0		SS	FH6	fold			tbl	tbl						
71.0														
73.5		SS	FH6	Sill			tbl	tbl						

STRUCT. B/S J/F  
 B A I J A 2

ROCK DESCRIPTION  
 Com Gr Test Co Alt Nam

DIST Id

Spl #	Width	COMMENTS 1	COMMENTS 2
1394		Overburden	
1395		Talc - Concentrated ultramafic Mat-dk grey with heavy grt-ank - talk variety (glass), relatively soft. Fr scratch, unit most strongly magnetic	
1396		Grey carbonate rock Parted by dark magnetite speckling; green talc, carbonate, silicate veining; more hard to scratch. Local staining for py in rock matrix, which is more silicified in those instances	
1397		Grey carbonate rock Matrix defined by minute Mt specks; green carbonate - grt - talc, local relief carbonate silicate texture is silicified matrix; limonite P. SLS - SB. S and 60-6100.	
1398		Talc (carbonate rock) Dk blk-grey (wood-magnetic) and black by field. Cons veins, talk pyg Evident local silicification parallel to c.s. The talc and c.s. with veins 61-63 lower 1' is strongly brecciated/laminated	

RESULTS: Intersected 048 (178) X 243-61, 068 (7.5) X 745-51, 049 (110) X 144-155, 058 (25) X 193-218  
 STAKE: PLS 23/93  
 FINISH: PLS 25/93  
 Casing pulled.

DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP

DATE: 02/23/1993  
 PAGE 1 OF 2

DIST	ROCK QUALITY			ASSAY DATA					
	Recl	Pc	Pcs1	Rq	Re%	Spl #	Width T	Au	Ag
43								opt	opt
43.5						1391	4.3	.046	1380
51						1392	3.5	.017	535
56						1393	5.0	.06	270
61						1394	5.0	.041	1410
66						1395		.100	35
71						1396		.100	35
73.5						1397		.006	275

Handwritten notes and a bracket in the Assay Data section of the table, spanning rows 51 and 56.

DIST	ID
77.25	
81.0	
77.5	
101.0	
105.0	
110.0	

ROCK DESCRIPTION		Com	Gr	Test	Co	Alt	Non
SS	PM6	band	NL	SIL	DOSS		
SS	FB	band	gy	SIL	FOSS		
SS	PM6	band	gy		6CRS		
SSS	F6	band	gy		8x	CLS	
"	"	"	"	"	"	"	
SSS	Fg	strips	gy				

STRUCT.		B/S	J/F
		B	A
		J	A
		F	50
		F	40
		F	45
		F	40

GANGUE			
CZ	BZ	CZ	CZ
QTZ 30	ANK 5		
QTZ 20	ANK 2		
QTZ 4	ANK 25	CM 2	
QTZ 4			
QTZ 0.5			
QTZ 3.0			

MINERALS			
METALLIC		D%	F%
		Py 15	
		Py 10	
		Py 5	
		Py 0.4	
		Py 0.1	
		Py 1.0	

Spl #	With T
1398	
1399	
1400*	
1401	
1402	
1403	

COMMENTS 1	COMMENTS 2
Green carbonate rock silicified + white crystallized, stained/leached. has thin pinkish, siliceous bands (cf. py associated). o.s. marked by fault/fracturing @ 40.	
Fydeitic carbonate rock with fracturing. silicified with cracks. Brecciation marked by dk chlorite filled fractures. tight folding of ribboning Qtz. local cc pink base with py; 1" fault zone @ 79.2; silty core	
Grey carbonate rock leached by white carbonate + green talc veins. also sandinized Qtz; evidence for tight folding; carbonate speckled, lower 1' of unit v. strongly schist. locally soft where talc present. local foliation parallel to core. local py. exhibits a fine texture due to close-packed ribboning and coarse veins	
Chlorite schist light-medium green chlorite with bulk carbonate speckling and streaked by yellow/brown bands which represent alt (see) below on sandinized Qtz. local py bands of sericit. local brecciated Qtz grains	

DIST	ROCK QUALITY			ASSAY DATA							
	Recl	Pc	Pcal	Rq	Re%	Spl #	Width	T	Av	Max	
32-1C						1394	3.75		0.8%	2810	PP2
18						1399	3.75		10.4%	1510	
97-5						1404			5.0%	105	
101						1401			100%	35	
105						1402			100%	35	
110						1403			100%	35	

SE/500  
1003/75

DIST	Id	ROCK DESCRIPTION					STRUCT.			MINERALS					SP#	Width	F	COMMENTS 1		COMMENTS 2	
		Com	Gr	Test	Co	Alt	Nom	B	A	J	Aq	GZ	BZ	CZ				DZ	EZ	FZ	COMMENTS 1
1150		SS																		lg seissitic / soft bands (see technical report?) see log above. At 97.5-101, local pink-red bands probably is probably schistose ultramafic	
1190		SS																		Characteristic schist - buff-yellow seissitic alt. bands are wider, up to 1cm in width; deformation shows local minute quartz veins. wisps in sec. alt.	
125		SS																		Mixed brown limestone / dark carbonatic ultramafic (schistose). Local see alt. Makes evidence into wide patches of alt. (see + silicification), locally in pink band of silic. - see interval fracturing.	
130		SS																		Brown Carbonate fx - weakly fractured Banded / lined local dk brown streaking - gross - homogeneous	
135		SS																		local rusty limestone	
1376		SS																			
1395		SS																		Calc - Carbonate rock relatively soft to scratch; con's speckled	
144		SS																		Brown Carbonate fx faced (int./cont./stake) veins, tan/darkish bands not particularly massive; alt. thin foliate bands; more shaly ss. Faced - Carbonate RZ	
149		SS																		DK grey - green, tabular speckled. bands patches of buff silic/ ss. (quartz in alt. local cross-bed. alt. regions - v. prominent)	
155		SS																			
159		SS																			

1

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ROCK QUALITY				ASSAY DATA														
DIST	Recl	Pc	Posl	Rq	R%	Spl #	Width	T	Au	Ag	As							
115.0						1404			.003		.105							
119.0						1405			.016		.550							
125						1406			.003		.105							
130						1407			.003		.105							
135						1408			.003		.105							
137.6						1409			.004		.135							
139.5						1410			.011		.375							
144						1411			.007		.240							
149						1412			.05		.170							
155						1413			.032		.1100							
159						1414			.003		.105							

.04 / 11.0





03B/250

ROCK QUALITY				ASSAY DATA							
Recl	Pc	Pcs1	Rq	Rq%	Spl #	Width	T	Au	Au	Au	DATA
162											
169					1415			.003	.05		Top
174					1416			.006	.205		Rel
					1417			.003	.105		Rel
178					1418			.005	.170		
182.7					1419			.003	.105		
188					1420			.008			
191					1421			.110			
198					1422	5		.220	.290	.810	615
200					1423	2		.065	.270	.050	1710
203					1424	3		.030	.100	.141	1410
206					1425	3		.043	.140	.044	1510
					1426	5		.054	.180	.104	1610
211					1427	3		.010	.340	.008	225
218					1428	4		.044	.150	.142	1440
220.4					1429			.009	.310		
2250					1430			.017	.585		
230					1431			.030	.100		
ENVY											

03B/260

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: March 5/93

NP-93-12

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1391	.046	1580				
2	92	.017	585				
3	93	.080	2740				
4	94	.041	1410				
5	95	.001	35				
6	96	.001	35				
7	97	.008	275				
8	98	.082	2810				
9	99	.044	1510				
10	1400	.003	105				
11	01	.001	35				
12	02	.001	35				
13	03	.001	35				
14	04	.003	105				
15	05	.016	550				
16	06	.003	105				
17	07	.003	105				
18	08	.003	105				
19	09	.004	135				
20	10	.011	375				
21	D-1411	.007	240				
22							
23							
24							

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: March 5/93

NP-93-12

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1412	.050	1710				
2	13	.032	1100				
3	14	.003	105				
4	15	.003	105				
5	16	.006	205				
6	17	.003	105				
7	18	.005	170				
8	19	.003	105				
9	20	.008	275				
10	21	.011	375				
11	5' 22	.023	790	}	.038 / 25'	(193' - 218'	
12	2' 23	.065	2230				
13	3' 24	.030	1030				
14	3' 25	.043	1470				
15	5' 26	.054	1850				
16	3' 27	.010	340				
17	4' 28	.044	1510				
18	29	.009	310				
19	30	.017	585				
20	D-1431	.030	1030				
21							
22							
23							
24							

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

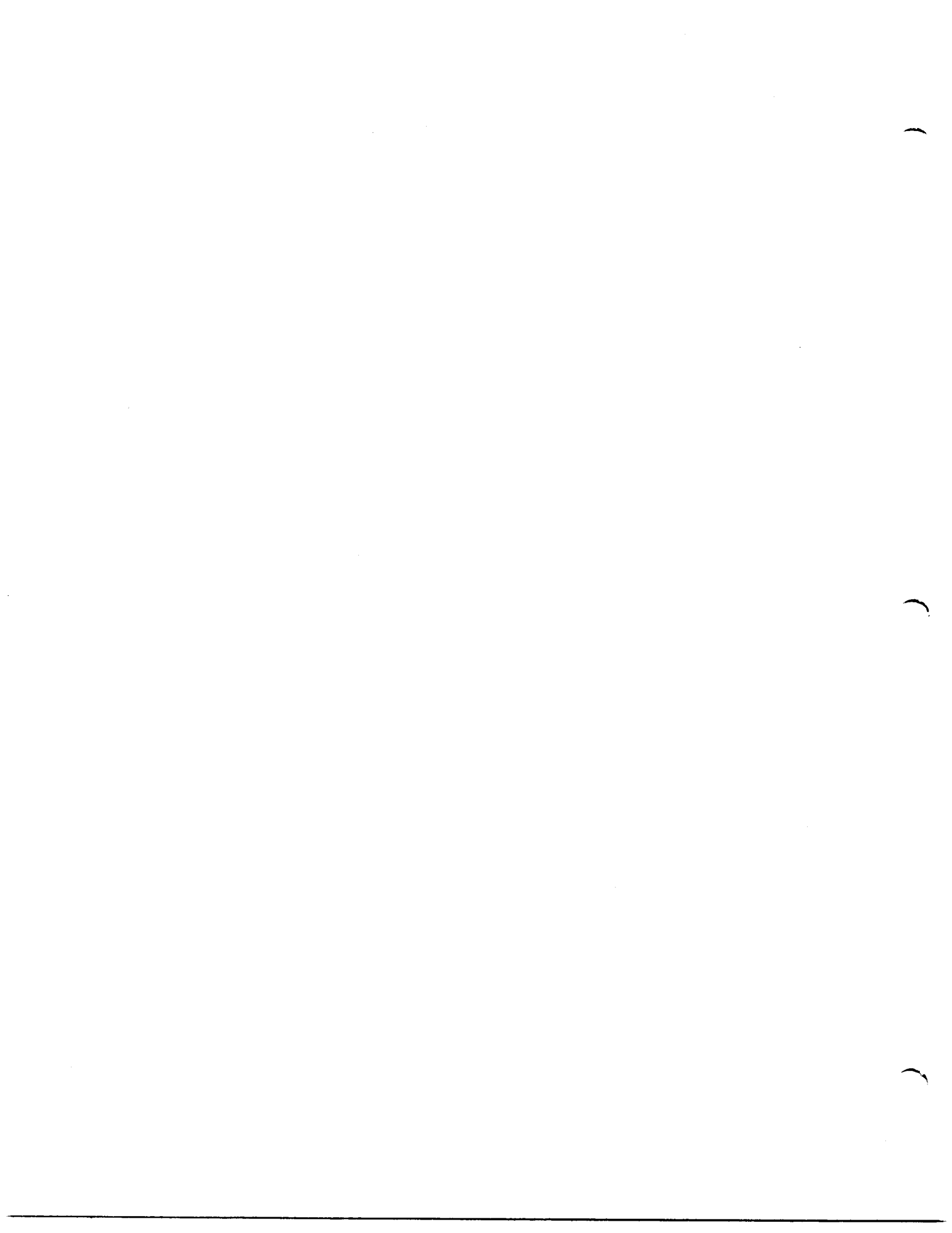
EXPLORATION 1602

DATE: March 12/93

RE ASSAYS ON REJECTS

NIP-93-12

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1422	.018	615				
2	23	.050	1710				
3	24	.041	1410				
4	25	.044	1510				
5	26	.047	1610				
6	27	.008	275				
7	D-1428	.042	1440				
8							
9							
10							
11							
12							
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17							
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19							
20							
21							
22							
23							
24							



ROYAL OAK MINES INC.

P. CARD

PROJECT: NP-RAMP\_ZONE  
 (CODY TWP, S1/4 Sec IV, T16N, R15W, N43E)

Date: 02/24/1993  
 Page 1 of 4

CAI  
 INC  
 OBE  
 OBI  
 LEASE

PAGE 1

DRILL HOLE: NP13-15  
 NORTHING: 210.63N  
 EASTING: 4005.80E  
 ELEVATION: 929.80  
 LENGTH: 230  
 DIST: 360  
 DIP: -45  
 AZIM: -45  
 DIST: 360  
 DIP: -45  
 AZIM: -45

DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP
0	360	-45									
230		-45									

Core stored: Hollinger Core Stock (Schramm, Inc.)  
 Drilled by: Banded Bars (Tommins)

DIST	ROCK DESCRIPTION			STRUCT.		MINERALS			COMMENTS 1	COMMENTS 2
	Com	Grs	Test Co	Alt	Norm	B	A	J/A2		
32.8										
36.0	SSS	fg	band	BY	SSS					Over-sand
41.0	S	F46	band	GV	SSS					Brown carbonate rock
46.0	"	"	"	BY	SSS					Schistose, laminated and wavy granitic
47.5	S			BY	SSS					Fine carbonate porphyroclasts by diffuse Mt(?)
47.7	SSS			FZ	SSS					Trassoidal BV; strong calc. alt. on valley SW (+P)
54.0	SS			BY	SSS					Out-d weathered by fault gouge (SS?)
54.5	SSS			FZ	SSS					FZ rubble/gouge
60.25	SS			BY	SSS					Brown carbonate rock, laminated/laminated
65.6	SSS			BY	SSS					and weathered with rusty limonite, evidence for tight folding; fault slip C.A. (SS?)

Sp#	Width	METALLIC		
		D%	E%	F%
1432				
1433				
1434				
1435				
1436				
1437				
1438				
1439				

A%	B%	C%	METALLIC		
			D%	E%	F%
0.2	1.5	10.2			
0.2	1.0	10.3			
0.2	1.5	10.2			
0.2	2.0				
0.2	4.0				
0.2	4.0				
0.2	5.0				
0.2	0.5				
0.2	0.5				

DIST	ROCK DESCRIPTION			STRUCT.		MINERALS			COMMENTS 1	COMMENTS 2
	Com	Grs	Test Co	Alt	Norm	B	A	J/A2		
54.5	SSS			BY	SSS					Fault zone, ch. but with 2" slickensided zone (SS?)
60.25	SS			BY	SSS					Gray Carbonate of wavy granitic, disturbed by drag specks/shales (ie. rounded Mt?)
65.6	SSS			BY	SSS					Gray Carbonate Rock with heavy chlorite from 63.6-65.6, in-c marked by 4" banded fault fill; c. 1/2" pyrite patches in unit. Rubble/shist (20) in ch. section







DIST	ROCK QUALITY				ASSAY DATA				
	Recl	Pc	Pcal	Rq	Re%	Spl #	Width	T	
117						1441	1.5	.119	
118						1442	3.0	.111	
119						1443		.006	
120						1444		.010	
121						1445		.006	
						1446		.105	
122						1447		.200	
						1448		.077	
123									
124									
125									
126									
127									
128									
129									
130									
131									
132									
133									
134									
135									

118 / 119 }  
 08-58L  
 0795-80

DIST	Id	ROCK DESCRIPTION				STRUCT.		MINERALS					COMMENTS 1	COMMENTS 2						
		Com	Gr	Text	Co	Alt	Norm	B	A	J	A2	GANGUE			METALLIC					
												CZ	BZ	CZ	DZ	EZ	FZ	Spl #	Width	
140		SS	frag	band								QZ 3	MK 10		Px 10					
145		SS	"	"								" 15	" 5		Px 0.5					
152		SS	"	bold							" 30	MK 5			Px 0.5					
154		S	"	"							" 2	" 3			Px 0.2					
159		S	frag	band							" 5	" 3			Px 30					
163.5		slg	ckl								QZ 20				Px 35					
167.30		SS	frag	band							QZ 30	MK 15			Px 0.5					
170		slg	ckl								QZ 4				Px 8					
174.0		SS	frag	ckl							QZ 4	MK 3			Px 35					

COMMENTS 1	COMMENTS 2
Green Carbonate Fx small scintillate, curved/fractured, med grey (black) and carb spotted/banded	
Faded Qz & Fx matrix; local brown colour	
Fuchsite Carbonate Fx - wtk med. fuch.	
Grey Carb. Fx with v. wk. fuch. tint - silicified with definite patches of possible felsite (buff-pink) with silicified crackle-bands + v. fg. px	
Felsite (90% of mineral) degranitic, crystalline, light buff-white w/ pink tint; hard to scratch; color in fracture o.c. mounted by slip (95)	
Grey Carbonate Fx Med. grey-brown (brown-like) with fussy Qtz/Ank; lined (95) O.P.S. Heavy px cubes as oc. silicified 30	
Felsite Silicified light buff-pink gran with silicified/silicified felsite local patches of brown separation	
Fuch. Carb. Fx with 45% Felsite - felsite local exhibits wtk/frag carbon matrix ckl. box fuchite filled wtk/frag	

DIST			ROCK QUALITY				ASSAY DATA							
	Recl	Pc	Pcs1	Rq	Re%	Spl #	Width	T						
140						1455								
142						1456		.001						
151								.003						
152						1457		.000						
154						1458		.000						
155						1459		.000						
163.5						1460	4.5	.075						
167.5						1461	3.8	.004						
172.1						1462	4.7	.091						
174						1463	20	.086				.046/21.7	C	6.73-188

ROYAL OAK  
MINES INC.

DIST	Id	ROCK DESCRIPTION			STRUCT.		
		Com	Gr	Test	Co	Alt	Mem
179		S	FA				
187		S	FMB				
189		S	FA	CKA			
194		S	FMB				
199		S	"				
202		S	"	GV			
206		S	"				
211		S	"				
218		S	"				
223		SS	"				
224.5		SSS	"				
228		SS	"				
230		SS	"				

MINERALS				METALLIC		
CZ	B%	CZ	CZ	D%	E%	F%
002 5	ANK 3			Ry 15		
002 7	" 10			Ry 2.5		
002 4				Ry 5.0		
002 10	ANK 7			Ry 0.5		
5	10			Ry 0.5		
002 4	ANK 0			Ry 0.5		
002 4	ANK 5			Ry 0.4		
" 3	ANK 6			Ry 0.4		
" 5	" 10			Ry 0.3		
" 2	ANK 5			Ry 0.3		
10	" 6			Ry 2.0		
002 6				Ry 2.0		
002 1	ANK 1.5			Ry 0.5		

Spi #	With T	COMMENTS 1	COMMENTS 2
1464		Fresh Cars Ex - local yell/buff silic. bands/patches	
1465		Two patches of silic. 1' with limonitic patch	
1466		Felsite - apophan, silic. weak pink tint disperse. X <sub>2</sub> in Ex matrix and local fractures	
1467		Fresh Cars Ex - Mod. Str. Felsite	
1468		10' of silic. (cut between C40-P02)	
1469		A-1 limonitic patch	
1470		Brown Cars Ex, - was silicite	
1471			
1472			
1473		Fresh. Cars Ex - wk. mod. fuchsitic	
1474		O.C. - unworked by disking/slip, and. for 40" (flat faulted) adjacent to fault line trend.	
1475		FELSITE - widely silicite	
		limonitic silicite - light buff-green and silicite area - first few feet	
		from pyroclastic silicite - silicite - silicite - possibly by 0.5-1.5% of gray silicite - possible minor "silicite" (un?)	
		O.C. (SS) - value carb. thombs near o.c.	
		Gray Cars Ex, more silicite near o.c.	
1476			



ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-13

DATE: March 12/93

	SAMPLE NUMBER	Au oz/ton	Au ppb					
1	D-1456	.003	105					
2	57	.004	135					
3	58	.004	135					
4	59	.007	240					
5	60	.079	2710	}				
6	61	.004	135					
7	62	.091	3120					
8	63	.046	1580					
9	64	.024	825					
10	65	.026	890					
11	66	.046	1580					
12	67	.010	340					
13	68	.026	890					
14	69	.010	340					
15	70	.013	445					
16	71	.003	105					
17	72	.005	170					
18	73	.001	35					
19	74	.001	35					
20	75	.002	70					
21	D-1476	.007	240					
22								
23								
24								

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

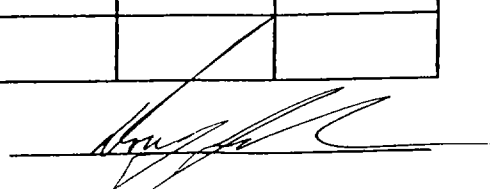
EXPLORATION 1602

NP-93-13

DATE:

March 12/93

	SAMPLE NUMBER	Au oz/ton	Au ppb					
1	D-1432	.029	995					
2	33	.013	445					
3	34	.036	1230					
4	35	.013	445					
5	36	.003	105					
6	37	.003	105					
7	38	.001	35					
8	39	.001	35					
9	40	.004	135					
10	41	.119	-	}				
11	42	.111	-					
12	43	.006	205					
13	44	.010	340					
14	45	.006	205					
15	46	.011	375					
16	47	.003	105					
17	48	.047	1610					
18	49	.002	70					
19	50	.002	70					
20	51	.001	35					
21	52	<.001	<35					
22	53	<.001	<35					
23	54	.010	340					
24	D-1455	.001	35					





ROYAL OAK MINES INC.

PROJECT: NP - RAMP ZONE  
(CUDY Twp, S1/4 Lot 3, Conc IV, Sec 15, T15S03, R18W18)

Logged By: P. COOK

Date: 02/26/1993  
Page 1 of 2

CAT \_\_\_\_\_

OBI \_\_\_\_\_

OBE \_\_\_\_\_

INC \_\_\_\_\_

LEASE \_\_\_\_\_

PAGE 1

DRILL HOLE	NORTHING	EASTING	ELEVATION	LENGTH	SP	OB	INC	LEASE
NP03-14	1072.25N	4249.51E	424.50	151.0				

DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	COMMENTS 1	COMMENTS 2			
																	SP#	Width	
0	360	-45																	
150		-45																	
Core Shared: Hattinger Core Block (Subcontractor, SMC)																			
Drilled by: Bradley Dins. (Timmins)																			
DIST	ID	Com	Grb	Text	Co	Alt	Norm	ROCK DESCRIPTION	B/S J/F	STRUC.	AZ	BZ	CZ	MINERALS			METALLIC		
														DZ	EZ	FZ			
49.0								OMG											
54.0								S FMS VERN BGSAL EGRS											
59.0								S FMS											
64.0								S FMS											
69.0								S FMS											
74.0								S FMS											
78.5								S FMS											
79.0								S FMS											
84.0								S FMS											
86.5								S FMS											
88.0								S FMS											
90.0								S FMS											

near surface on section 4250 E

Intersected 05/55 (785-84 and 0.25 feet from 255) 18.5-124.0

START: 185-25/93

FINISH: 185-26/93

base fault dips 65, folded veins

Fresh carb. rock - highly brecciated; local

dk. calcareous limestone / rhyolite

Band / limestone / rhyolite - one 2" chert

peeling

Gray carb. rock - brecciated with chert

partings (folded), variable foliation

Limestone, 1/2 group @ 74.5

Fault zone - quartzitic / brecciated

qtz / rubble, possibly 2' grain - difficult to find blocks

qtz vein / Fresh carb. (Sil. Ex)

Approx 5-6' calcareous / argill rubble

qtz / Sil. Ex, brecciated, stained, massive base

folded

calc. chert / rhyolite / brecciated

bubble carb. - polished

calcareous / argill. - stained

siliceous

DA

DIST	ROCK QUALITY				ASSAY				DATA				
	Reci	Pc	Pesi	Rq/Ro%	Sp1 #	Width	Au	Au	Au				
41.0							94	820					
54.0					3075		1009	310					
59					3076		1005	105					
64					3077		760	70					
69.0					3078		1006	135					
74.0					3079		1002	410					
78.0					3080		110	375					
79.0					3081		114						
84.0					3082		1044	1510					
86.5					3083		1010	65					
88.0					3084		1003	105					
89.0					3085		1006	205					

105/55



DIST	ROCK QUALITY				ASSAY DATA					
	Recl	Pc	Pcal	Rq/Re%	Spl #	Width	IT	AVA	AV	AV
92					3086			.014	825	
95					3087			.013	445	
98.5					3088			.031	1000	
103					3089			.056	1920	
107					3090			.061	2090	
105.5					3091			.006	205	
113					3092			.088	1990	
										.23 / 23.5
115					3093			.45		08
118					3094			.53		.47 opt Av / 11.0
121					3095			.425		
124					3096			.437		
128.5					3097			.016	550	
					3098			.007	240	
135					3099			.003	105	
135					3100			.005	170	
143					3101			.016	550	
148					3102			.006	205	
151					3103			.006	205	

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: March 8/93

NP-93-14

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-3075	.009	310				
2	76	.003	105				
3	77	.002	70				
4	78	.004	135				
5	79	.012	410				
6	80	.011	375				
7	15' 81	.140	-	}	.05 / 5.5		
8	5' 82	.044	1510				
9	83	.018	615				
10	84	.003	105				
1	85	.006	205				
12	86	.024	825				
13	87	.013	445				
14	88	.031	1060				
15	4.5 89	.056	1920	}	.23 / 25.5		
16	4.0 90	.061	2090				
17	2.5 91	.006	205				
18	3.5 92	.058	1990				
19	2 93	.415	-				
20	3 94	.575	-				.47 opt / 11.0
21	3 95	.425	-				
22	3 96	.437	-				
23	97	.016	550				
24	D-3098	.007	240				

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602  
NP-93-14

DATE: March 8/93

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-3099	.003	105				
2	3100	.005	170				
3	01	.016	550				
4	02	.006	205				
5	D3103	.006	205				
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							



DIST	ROCK QUALITY			ASSAY DATA							
	Recl	Pc	Pcs1	Rq	Re%	Spl #	Width	T	Av	Av	Av
49									OPK		PPS
51.5						1251			013		355
55						1252			018		615
60.5						1255			017		
65.5						1254			010		340
70.5						1255			030		1030
75						1281			015		
80.5						1257			008		1300
85.20						1258			029		995









DIST	ROCK QUALITY				ASSAY DATA						
	Recl	Pc	Posl	Rq	Re%	Spl #	Width	T	Au	Au	Au
115						1266			.017	.012	.015
118-6						1267			.058	.040	
121						1268			.056	.040	
124-5						1269			.065	.2230	
130						1270			.051	.1750	
134						1271			.101		
151						1272			.009	.205	

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: FEB 25/93

HOLE # NP-93-15

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1251	.013	445				
2	52	.018	615				
3	53	.017	585				
4	54	.010	340				
5	55	.030	1030				
6	56	.045	1540				
7	57	.038	1300				
8	58	.029	995				
9	59	.120	-				
10	60	.242	-				
11	61	.157	-				
12	62	.050	1710				
13	63	.035	1200				
14	64	.035	1200				
15	65	.016	550				
16	66	.020	685				
17	67	.058	1990				
18	68	.026	890				
19	69	.065	2230				
20	70	.051	1750				
21	71	.101	-				
22	D-1272	.006	205				
23							
24							





DIST	ROCK QUALITY			BU ASSAY DATA						
	Recl	Pc	Pcs1	Rq	Re%	Spl #	Width	FT	DPT	MTB
52.5						1273	3.5		1019	1850
58.0						74	5.5		006	205
60.0						75				
65.6						76	5.5		1032	3150
70.6						77	5.0		031	1060
75.5						78	4.9		1071	2430
80.5						79	5.0		1200	-
83.0						80	5.5		1084	2950
86.0						1281	3.0		051	1750





DIST	ROCK QUALITY				ASSAY DATA				
	Recl	Pc	Pcal	Rq/Res%	Spl #	Width	Th	DPT	PPB
113.0					1282	27.0	.018	.015	
114.8					83	18	.014	480	
120.5					84	57	.016	550	
124.7					85	42	.008	275	
125.7					86	5.0	.011	375	
134.5					87	4.8	.001	35	
136.0					1288	15	.001	35	





ROYAL OAK ANALYTICAL LABORATORY

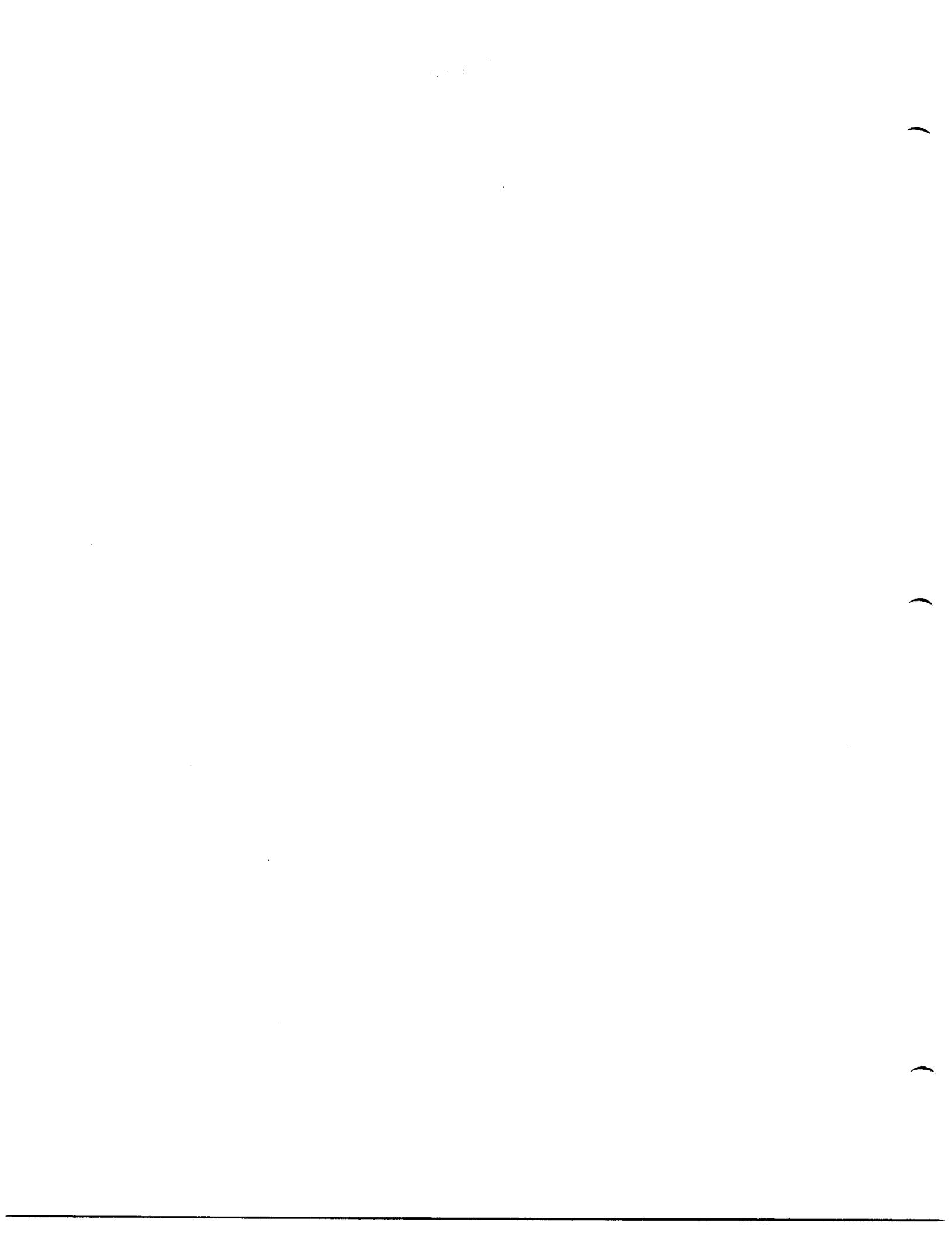
CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: FEB 25/93

Hole # NP-93-16

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1273	.019	650				
2	74	.006	205				
3	75	.005	170				
4	76	.092	3150				
5	77	.031	1060				
6	78	.071	2430				
7	79	.200	-				
8	80	.086	2950				
9	81	.051	1750				
10	82	.018	615				
1	83	.014	480				
12	84	.016	550				
13	85	.008	275				
14	86	.011	375				
15	87	.001	35				
16	88	.001	35				
17	89	.001	35				
18	D-1290	.003	105				
19							
20							
21							
22							
23							
24							





DIST	ROCK QUALITY				ASSAY DATA					
	Recl	Pc	Pcs1	RqRe%	Spl #	Width IT	Am	Am	Am	Am
62.1							0.85			
62.0					1355	4.7	1.007	280		
70.2					1356	4.0	1.038	1100		
75.0					1357	4.0	1.032	1100		
78.0					1358	3.0	1.045	1540		
80.1					1359	2.8	1.029	995		
85.0					1360	4.2	1.132			
90.0					1361	5	1.183			









DIST	ROCK QUALITY				ASSAY DATA					
	Recl	Pc	Pcs1	Rq/Re%	Spl #	Width	IT	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
11B-S					1368			.002	.002	70
1250					1369			.002		70
1300					1370			.005	.010	510
821					*1371			.002		70
051					1372			.001		35
331					*1373			.002		70
174					1374			.012		400
179					1375			.004		135
182					1376			.003		105
1913					*1377			.002		105
1940					1378			.002		70
250					*1379			.002		70

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-17

DATE: March 3/93

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1355	.007	240				
2	56	.035	1200				
3	57	.032	1100				
4	58	.045	1540				
5	59	.024	995				
6	60	.132	-				
7	61	.183	-				
8	62	.356	-				
9	63	.016	550				
10	64	.208	-				
	65	.005	170				
12	66	.008	275				
13	67	.004	135				
14	68	.002	70				
15	69	.002	70				
16	70	.009	310				
17	71	.002	70				
18	72	.001	35				
19	73	.002	70				
20	74	.012	410				
21	75	.004	135				
22	76	.003	105				
	77	.003	105				
24	78	.002	70				

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-17

DATE: March 3/93

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1379	.002	70				
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							











ROYAL OAK ANALYTICAL LABORATORY

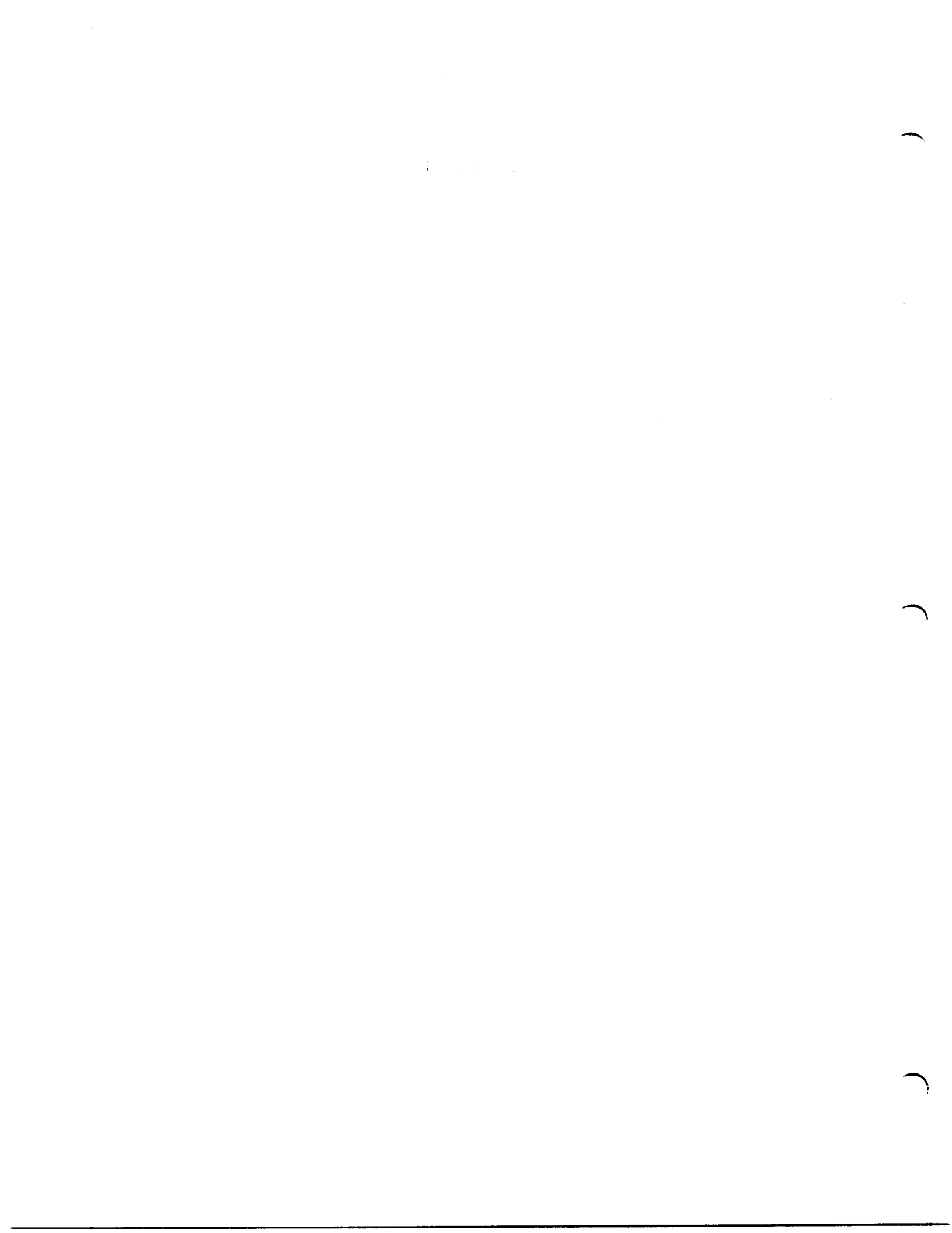
CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: March 4/93

NP-93-18

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1380	.003	105				
2	81	.044	1510				
3	82	.019	650				
4	83	.025	855				
5	84	.006	205				
6	85	.004	135				
7	86	.009	310				
8	87	.018	615				
9	88	.020	685				
10	89	.029	995				
--	D-1390	.146	-				
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
24							



PROJECT: NP. RAMP ZONE  
(Cody Top, Slight Conc. claim P35172)

Date: 02/24/1993  
Page 1 of 2

P. Conrad

DRILL HOLE: NP43-21  
 NORTHING: 47138N  
 EASTING: 330167E  
 ELEVATION: 910.60  
 LENGTH: 185'  
 CAT: \_\_\_\_\_  
 OBI: \_\_\_\_\_  
 OBE: \_\_\_\_\_  
 INC: \_\_\_\_\_  
 LEASE: \_\_\_\_\_

DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	DIST	AZIM	DIP	COMMENTS 1	COMMENTS 2
0	360	-45											
185		-42											
Core started: Hollinger Cove Shale (Schrammer) (S)													
Drilled by: Buckley Geos. Ltd (Timmins)													

DIST	ROCK DESCRIPTION			STRUCT.			MINERALS				SPI #	Wth	T	
	Com	Gr	Text	Co	Alt	Nam	B/S	J/F	A%	B%				C%
82.0														
87.0	SS	fg	low	gy	chl	TRF			Py	05				1477
89.5	SS	fg	low	gy	chl	TRF			Py	02				1478
95.0	SS	fg	low	gy	chl	TRF	F40		Py	30				1479
100.0	SS	fg	low	gy	chl	TRF	F70		Py	20				1480
105.0	SS	fg	low	gy	chl	TRF	F55		Py	04				1481
107	SSS	fg	low	gy	chl	TRF	F45		Py	05				1482
111.5	SSS	fg	low	gy	chl	TRF			Py	04				1483
115.25	SSS	fg	low	gy	chl	TRF			Py	10				1484
120	SSS	fg	low	gy	chl	TRF			Py	20				1485
124.50	SSS	fg	low	gy	chl	TRF			Py	20				1486

Start: FS 24193  
Finish: FS 25193

Remarks:  
To test Ramp Zone on east for 1107 E  
Intersected 1054 opt on 10.50  
Pung cement hole: Full casing area.

Comments:  
1477 - Lined with mica printing, fine grained, uniform with v. bit yellow swags; local patches of silicification  
1478 - (Tuff?) as above. Lacks mica swags  
1479 - Brown, friable Py (P)  
1480 - Silicified to a limited/limited - possibly fractured bit/sed  
1481 - Possibly part foliated felsite??  
1482 - Black, mt-mad, silicified, local Qtz veins - technized Qtz veins  
1483 - Lined/Lined/Trunking  
1484 - Fault Zone - Bredding/Blocky  
1485 - Brown Cryst Py - Silicified  
1486 - Lined/Lined/Blocky  
Same felsite in-d of brecciated block. Lined brecciation - possible silicified

DIST	ROCK QUALITY			ASSAY DATA								
	Recl	Pc	Pcs	Rq	Re%	Spl #	Width	It	As	As	As	As
82												
87						1471			100%	135		
87						1478			100%	70		
95						1479			100%	180		
100						1480			100%	2500		
105						1481			100%	275		
109						1482			100%	105		
1113						1483			100%	105		
11525						1484			100%	275		
120						1485			100%	280		
1243						1486			100%	280		



ROCK QUALITY				ASSAY DATA									
DIST	Recl	Pc	Posl	Rq	Re%	Spl #	Width	IT	As	As	As	As	As
130						1487	5.7		146	ppb			
135.7						1488	5.7	1171	107.02%	47.7	C	111.5	
145						1489	5.7	1092					
149						1490	4	1068					
151						1491	5	1087	2980				
167						1492	5	1056	1920				
169						1493		1017	585				
174						1494		1001	35				
181						1495		1070	685				
187						1496		1001	35				
188						1497		1018	600				

159.0 (x 6' ground C 135.7-145 area)

6' ground  
over 1000  
Recl = 1489  
33



ROYAL OAK ANALYTICAL LABORATORY

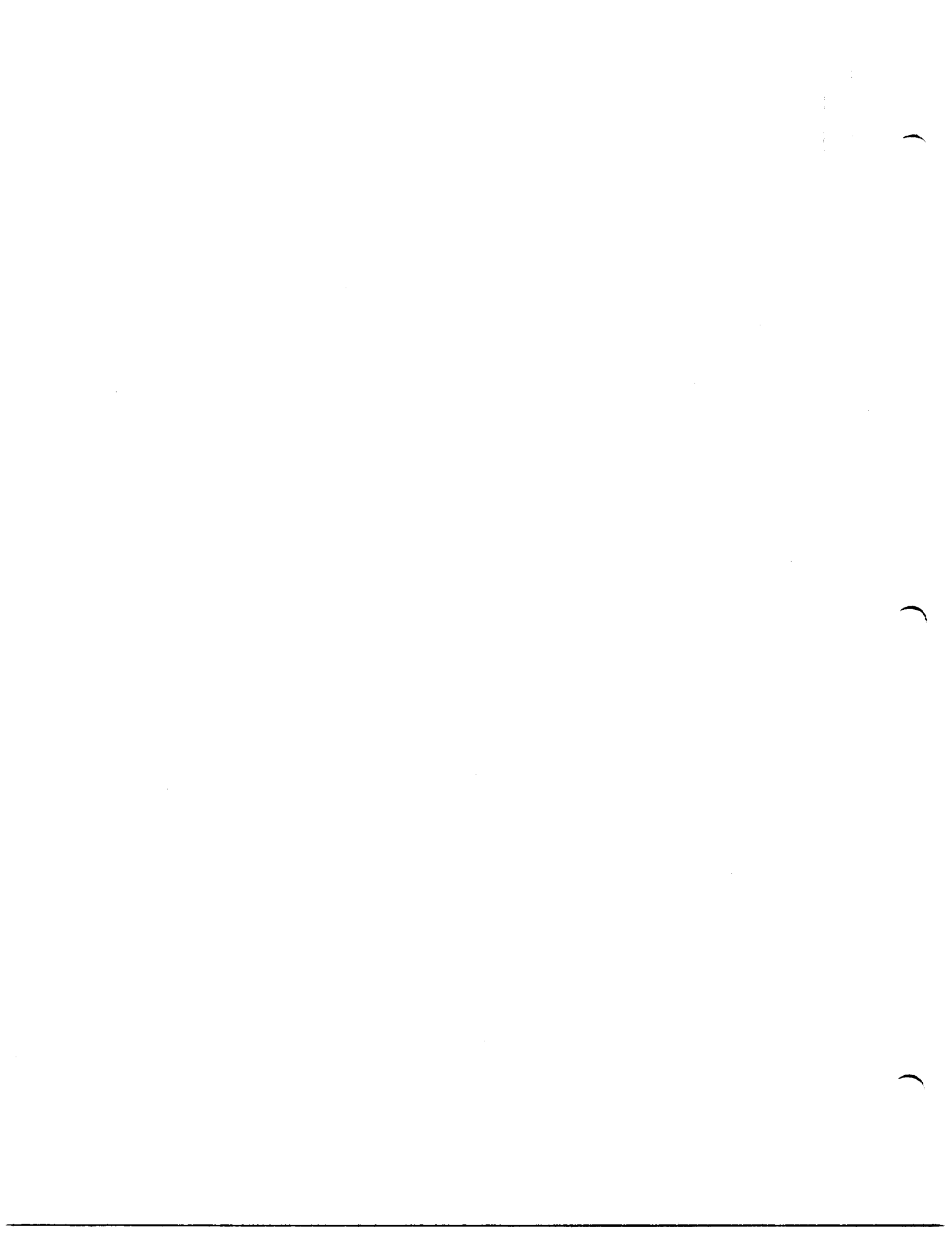
CERTIFICATE OF ANALYSIS

EXPLORATION 1602

DATE: March 9/93

NP-93-21

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1477	.004	135				
2	78	.002	70				
3	S.S 79	.054	1850	}	.064 opt / 10' S		
4	S.O 80	.073	2500				
5	81	.006	205				
6	82	.003	105				
7	83	.003	105				
8	3.95 84	.282	-	}			
9	4.25 85	.186	-				
10	4.3 86	.084	2880				
11	5.7 87	.046	1580				
12	5.7 88	.171	-				.11 opt Au / 41.7'
13	3.3 89	.022	755				or
14	4. 90	.028	960		.15 opt Au / 24.4'		
15	5 91	.087	2980				
16	5 92	.056	1920				
17	93	.017	585				
18	94	.001	35				
19	95	.020	685				
20	96	.001	35.				
21	D-14 97	.026	890.				
22							
23							
24							









DIST	ROCK QUALITY				ASSAY DATA					
	Rec1	Pc	Pcs1	Rq/Re%	Spl #	Width	Fr	A <sub>u</sub>	A <sub>g</sub>	A <sub>pp</sub>
103					3052			.032	.1100	
105					3053			.005	.120	
106					3054			.228		
111.5					3055			.007		
112.7					3056			.010	.56	
114.6					3057			.033	.130	
119.0					3058			.005	.190	
120.3					3059			.185		
121					3060			.109		
										.087 / 11.5 @ 110 - 130 (11.0)



DIST	ROCK QUALITY				ASSAY DATA						
	RecI	Pc	Posl	Rq	Re%	Spl #	Width	T	Au	Ag	As
130						3061			.005	1430	
134						3062			.003	105	
137						3063			.006	285	
141						3064			.019	650	
149						3065			.004	135	
151						3066			.029	995	
151S						3067			.022	755	
155						3068			.061	2090	
160						3069			.006	265	
164						3070			.003	195	
166						3071			.021	35	







ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

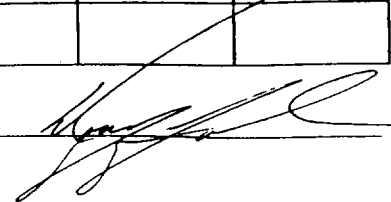
EXPLORATION 1602

NP-93-22

DATE:

March 9/93

	SAMPLE NUMBER	Au oz/ton	Au ppb					
1	D-3048	.209	-	✓				
2	49	.018	615					
3	50	.003	105					
4	51	.004	135					
5	52	.032	1100					
6	53	.005	170					
7	54	.228	-	✓				
8	55	.002	70					
9	56	.010	340					
10	57	.033	1130					
11	58	.005	170					
12	1.3 59	.189	-	}	.089/	11.0		
13	4.7 60	.109	-					
14	5.0 61	.043	1470					
15	62	.003	105					
16	63	.006	205					
17	64	.019	650					
18	65	.004	135					
19	66	.029	995					
20	67	.022	755					
21	68	.061	2090					
22	69	.006	205					
23	70	.003	105					
24	D-3071	.001	35					



ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-22

DATE: March 9/93

	SAMPLE NUMBER	Au oz/ton	Au ppb					
1	D-3072	.001	35					
2	73	.001	35					
3	D-3074	<.001	<35					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								



15  
3-2  
1/2

DIST	ROCK QUALITY			ASSAY DATA						
	Recl	Pc	Posl	Ra	Re%	Spl #	Width	T	Au	Au
42.7									opt	ptz
47						1498			1001	35
51						1499			1001	35
56						1500			1005	170
61						3001			1005	170
65						3002			1014	480
70						3003	5.0		1051	1060
74						3004	2.75		1058	1650
75										
75.9						3005	1.55		1007	240
79.6						3006	3.7		1061	7090
80						3007			1005	170
86						3008			1004	135

0.021  
14.7







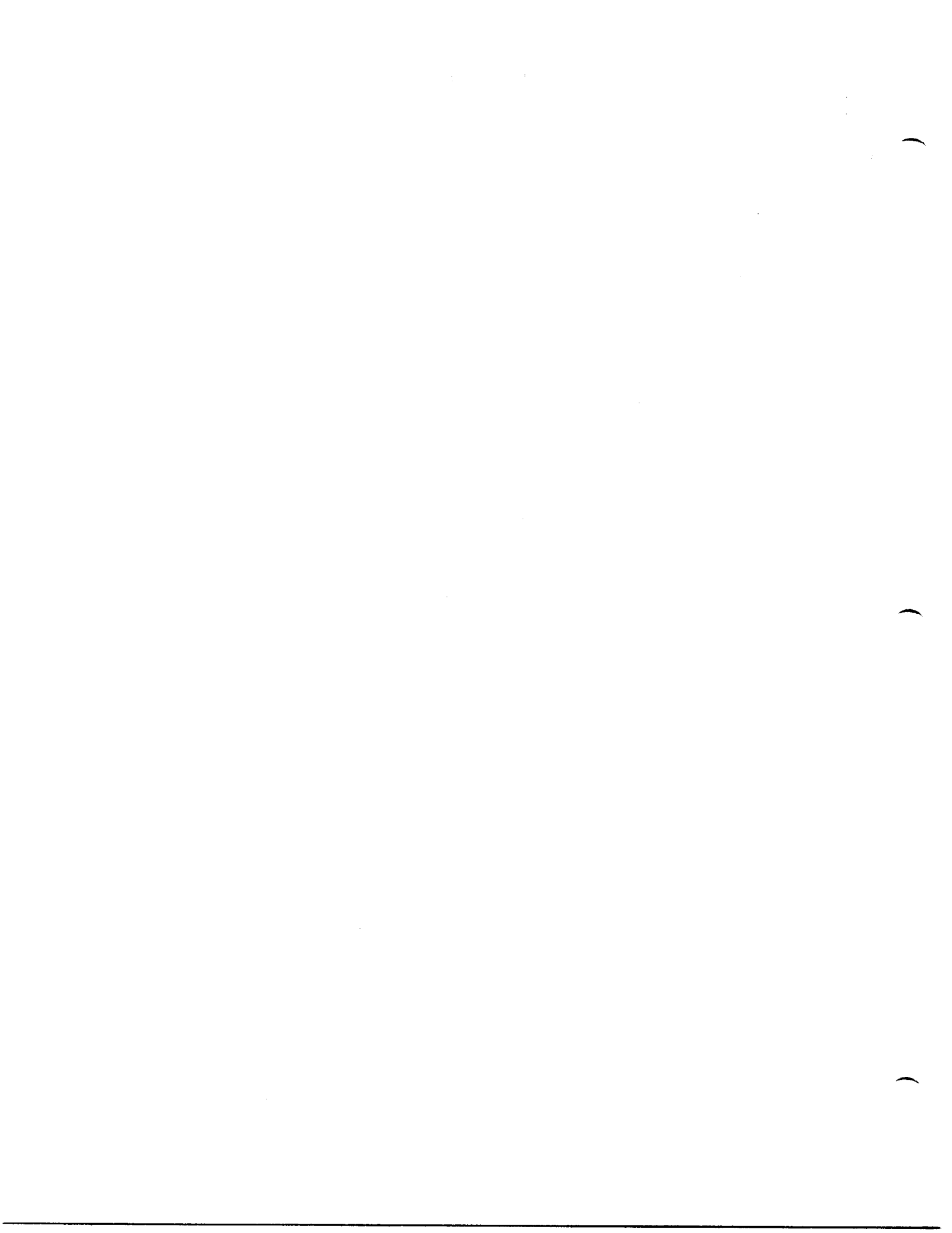
ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602  
NP-93-23

DATE: March 11/93

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-1498	.001	35				
2	99	.001	35				
3	1500	.005	170				
4	3001	.005	170				
5	02	.014	480				
6	03	.031	1060				
7	04	.048	1650				
8	05	.007	240				
9	06	.061	2090				
10	07	.005	170				
1	08	.004	135				
12	09	.004	135				
13	10	.007	240				
14	11	.026	890				
15	12	2.001	635				
16	13	.002	70				
17	14	.005	170				
18	15	.003	105				
19	D-3016	.001	35				
20							
21							
22							
23							
24							





DIST	ROCK QUALITY			ASSAY DATA						
	Recl	IPc	Pcs1	Rq	Re%	Spl #	Width	IT	As	At
32.8									0.2	1.2
36.0						3017			.001	.35
41.0						3018			.001	.35
46						3019			.005	1.20
51						3020			.001	.35
56						3021			.003	1.05
59						3022			.003	.35
61						3023			.002	.20
66						3024			.004	1.35
71						3025			.004	1.35
76						3026			.009	3.0
81						3027			.009	3.0
85						3028			.006	2.05
90						3029			.010	3.55
95						3030			.007	2.35
100						3031			.020	6.0
105						3032			.021	6.2
110						3033			.063	2.60
115						3034			.020	6.5

(90-115)

DIST	ID	ROCK DESCRIPTION					STRUCT. B/S J/F	MINERALS						COMMENTS 1	COMMENTS 2			
		Com	Gr	Text	Co	Alt		Mem	GANGUE			METALLIC						
							B	A	J	A	CZ	BZ	CZ	QZ	EZ	FZ	Spl #	Width
115		SS	fg	hard	gb	sea	F20										3035	
120		SS	fg	med	br	sea	F15										3036	
125		SS	"	med	br	sea	F20										3037	
130		SS	long	spk	gt	sea											3038	
135		SS	"	"	"	sea											3039	
140		SS	"	"	"	sea											3040	
144		SS	"	"	"	sea											3041	
149		SS	"	"	"	sea											3042	
151		SS	"	"	"	sea											3043	
159		SSS	FMS	hard	gt	chl	F20										3044	
164		"	"	"	"	chl	F10										3045	
166		SSS	"	"	"	sea											3046	
170		SSS	fg	hard	"	SIL	F30										3057	

COMMENTS 1	COMMENTS 2
Felsitic siliceous buff green mud shale with rounded pebbles.	
Brown sandstone rock	
Green sandstone rock	
Medium green sand sandstone spotted (i.e. MnO2) sand. Silicified	
Caliche sandstone with pebbles	
possible sandstone with pebbles	
1-2" felsic sandstone (pyroxene)	
Textured Qtz - knots	
see alt holes on 015	
Green sandstone with weak tech tint that is locally marked by patches of opaque siliceous sandstone	
see alt holes on 015	

DIST	ROCK QUALITY				ASSAY DATA					
	Recl	Pc	Pos	Rq	Re%	Spl #	Width	IT	Av	Av
115						3035			95	95
120						3036			100	100
121						3037			100	100
130						3038			100	100
135						3039			100	100
140						3040			100	100
141						3041			100	100
142						3042			100	100
143						3043			100	100
151						3044			100	100
152						3045			100	100
153						3046			100	100
160						3047			100	100
170						3048			100	100

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602

NP-93-24

DATE: March 5/93

	SAMPLE NUMBER	Au oz/ton	Au ppb				
1	D-3017	.001	35				
2	18	.001	35				
3	19	.005	170				
4	20	.001	35				
5	21	.003	105				
6	22	.003	105				
7	23	.002	70				
8	24	.004	135				
9	25	.004	135				
10	26	.009	310				
1	27	.009	310				
12	28	.006	205				
13	29	.013	445				
14	30	.024	825				
15	31	.028	960				
16	32	.021	720				
17	33	.063	2160				
18	34	.020	685				
19	35	.013	445				
20	36	.005	170				
21	37	.002	70				
22	38	.002	70				
23	39	.004	135				
24	D-3040	.001	35				

ROYAL OAK ANALYTICAL LABORATORY

CERTIFICATE OF ANALYSIS

EXPLORATION 1602  
NP-93-24

DATE: March 5/93

	SAMPLE NUMBER	Au oz/ton	Au ppb					
1	D-3041	.002	70					
2	42	<.001	<35					
3	43	.002	70					
4	44	.001	35					
5	45	.012	410					
6	46	.010	340					
7	D-3047	.035	1200					
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								



**Report of Work Conducted  
 After Recording Claim**

Mining Act

Transaction Number  
**W9460.00176**

Personal information collected on this form is obtained under the authority of the M  
 this collection should be directed to the Provincial Manager, Mining Lands, Min  
 Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.



900

- Instructions:**
- Please type or print and submit in duplicate.
  - Refer to the Mining Act and Regulations for requirements of mining assessment work or consult the Mining Recorder.
  - A separate copy of this form must be completed for each Work Group.
  - Technical reports and maps must accompany this form in duplicate.
  - A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s) <b>ROYAL OAK MINES INC.</b>	Client No. <b>136226</b>
Address <b>P.O. BAG 2010 TIMMINS ONT</b>	Telephone No. <b>705-360-1141</b>
Mining Division <b>PORCUPINE</b>	Township/Area <b>CODY/MACKLEM</b>
	M or G Plan No. <b>G-3994</b>
Dates Work Performed From: <b>FEB. 1 1993</b>	To: <b>MAR 30 1993</b>

**Work Performed (Check One Work Group Only)**

Work Group	Type
<input type="checkbox"/> Geotechnical Survey	
<input checked="" type="checkbox"/> Physical Work, Including Drilling	<b>Diamond Drilling.</b>
<input type="checkbox"/> Rehabilitation	
<input type="checkbox"/> Other Authorized Work	
<input type="checkbox"/> Assays	
<input type="checkbox"/> Assignment from Reserve	

**RECORDED**  
**AUG 24 1994**  
 Receipt: \_\_\_\_\_

Total Assessment Work Claimed on the Attached Statement of Costs \$ **39,348<sup>00</sup>**

**Note:** The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

**Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)**

Name	Address
<b>Bradley Bros Ltd</b>	<b>Hwy 101 West, Timmins Ont.</b>
<b>Paul Coad</b>	<b>528 Murray St., Timmins, Ont. P4N 7A9</b>
<b>Peter Harvey</b>	<b>Box 1555 South Porcupine Ont. P0N 1H0</b>

(attach a schedule if necessary)

**Certification of Beneficial Interest \* See Note No. 1 on reverse side**

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	Date <b>Aug 17 '94</b>	Recorded Holder or Agent (Signature) <b>Peter Harvey.</b>
--	---------------------------	--

**Certification of Work Report**

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.		
Name and Address of Person Certifying <b>Peter Harvey Box 1555 South Porcupine, Ont. P0N 1H0</b>		
Telephone No. <b>705-235-5409</b>	Date <b>Aug 17 1994</b>	Certified By (Signature) <b>Peter Harvey.</b>

**For Office Use Only**

Total Value Cr. Recorded <b>\$39,348.</b>	Date Recorded	Mining Recorder <b>[Signature]</b>
Deemed Approval Date <b>Nov. 22, 1994</b>	Date Approved <b>Nov. 22, 1994</b>	
Date Notice for Amendments Sent		

**RECEIVED**  
**AUG 24 1994**  
**130 @ AK**  
**PORCUPINE MINING DIVISION**

Work Report Number Applying for Reserve	Claim Number (see Note 2)	Number of Claim Units
	P15603	1
	P 333172	1
	P 868207	1
Total Number of Claims		3

Value of Assessment Work Done on this Claim	Value Applied to this Claim	
30,692	0	
8,656	0	
	800	
Total Value Work Done		39,348
Total Value Work Applied		800

Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date	
400	30292	
400	8256	
Total Assigned From		800
Total Reserve		38548

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to prioritize the deletion of credits. Please mark (✓) one of the following:

- Credits are to be cut back starting with the claim listed last, working backwards.
- Credits are to be cut back equally over all claims contained in this report of work.
- Credits are to be cut back as prioritized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature <i>Peter Harvey</i>	Date Aug 22 '94
---	----------------------------------	--------------------



Ministry of  
Northern Development  
and Mines

Ministère du  
Développement du Nord  
et des mines

NHL

**Statement of Costs  
for Assessment Credit**

Transaction No./N° de transaction  
**W9460.00176**

**État des coûts aux fins  
du crédit d'évaluation**

**Mining Act/Loi sur les mines**

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4<sup>e</sup> étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

**1. Direct Costs/Coûts directs**

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre	3,644	
	Field Supervision Supervision sur le terrain		3,644
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert- conseil	Type Drill Contractor	29,846	
	Assays	3,530	
	Surveyor	1,250	34,626
Supplies Used Fournitures utilisées	Type Core Storage	918	
			918
Equipment Rental Location de matériel	Type		
<b>Total Direct Costs Total des coûts directs</b>			<b>39,108</b>

**2. Indirect Costs/Coûts indirects**

\*\* Note: When claiming Rehabilitation work Indirect costs are not allowable as assessment work.  
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type Vehicle	45	
	Fuel	115	
			160
Food and Lodging Nourriture et hébergement			
Mobilization and Demobilization Mobilisation et démobilisation			
<b>Sub Total of Indirect Costs Total partiel des coûts indirects</b>			<b>160</b>
<b>Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)</b>			<b>160</b>
<b>Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs)</b>		<b>Valeur totale du crédit d'évaluation (Total des coûts directs et Indirects admissibles)</b>	<b>39,348</b>

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

**Filing Discounts**

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
	x 0.50 =

**Remises pour dépôt**

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Evaluation totale demandée
	x 0.50 =

**Certification Verifying Statement of Costs**

I hereby certify:  
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Project Geologist I am authorized  
(Recorded-Holder, Agent, Position in Company)

to make this certification

**Attestation de l'état des coûts** **Aug 24 1994**

J'atteste par la présente :  
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de \_\_\_\_\_ je suis autorisé  
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature Peter Harvey Date Aug 17 '94

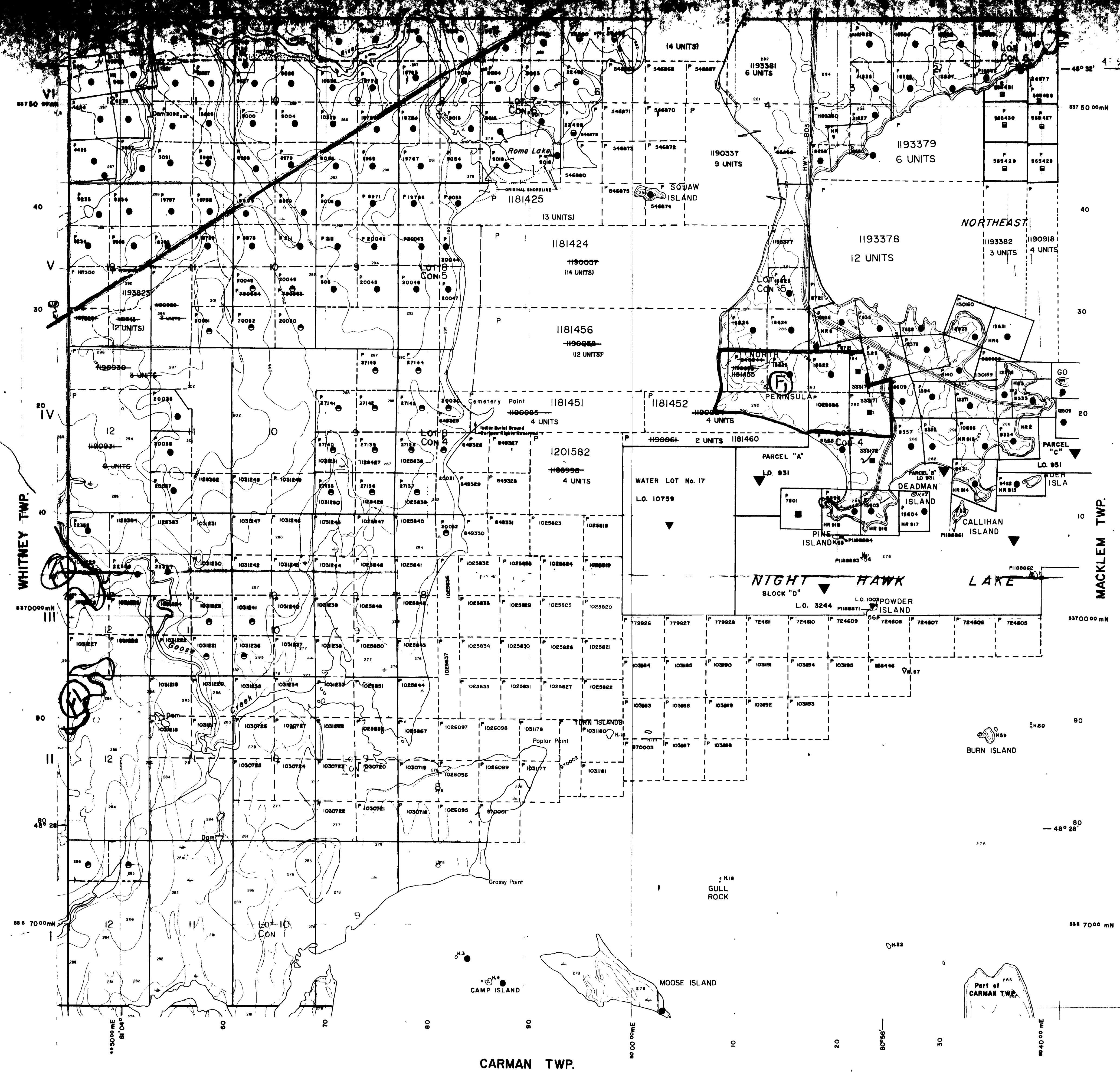
**Legend**

- Contours
- Control Points
- Vertical
- Culvert
- Falls
- Double line river
- Fence, Hedge, Wall
- Feature Outline
- Flooded Land
- Lock
- Marsh or Swamp
- Mast
- Mine Head Frame
- Outcrop
- Rapids
- Double line river with multiple rapids
- Reservoir
- River, Stream, Canal
- Approximate boundary
- Orientation of flow
- Spot Elevation
- Transmission Line
- Utility Poles
- Wharf, Dock, Pier
- Wooded Area

**AREAS WITHDRAWN FROM DISPOSITION**

Description	Order No.	Date	Disposition	File
M.R.O. - MINING RIGHTS ONLY				
S.R.O. - SURFACE RIGHTS ONLY				
M.+S. - MINING AND SURFACE RIGHTS				
Application Pending Under Public Lands Act				

THIS TWP. IS SUBJECT TO FOREST ACTIVITY IN 1994/95 FURTHER INFORMATION AVAILABLE ON FILE.



**DISPOSITION OF CROWN LANDS**

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	○
" MINING RIGHTS ONLY	◐
LEASE, SURFACE & MINING RIGHTS	◑
" SURFACE RIGHTS ONLY	◒
" MINING RIGHTS ONLY	◓
LICENCE OF OCCUPATION	◔
ORDER-IN-COUNCIL	◕
RESERVATION	◖
CANCELLED	◗
SAND & GRAVEL	◘

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 8, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 82, SUBSEC. 1.

**SCALE 1:20 000**

**GRID ZONE 17**

**NOTES**

THE WHOLE OF MOOSE ISLAND IS ATTACHED TO THE TOWNSHIP OF CODY. (FILE 23642)

FLOODING RIGHTS RESERVED TO ELEVATION 903.5' (T.B.N.D. RAILWAY DATUM) ON NIGHT HAWK LAKE AND THAT PORTION OF THE FREDERICK HOUSE RIVER BETWEEN NIGHT HAWK LAKE AND FREDERICK HOUSE LAKE TO ONTARIO HYDRO.

**ISSUED**

DEC 15 1994

PORCUPINE MINING DIVISION

**TOWNSHIP**

**CODY**

M.N.R. ADMINISTRATIVE DISTRICT

**TIMMINS**

MINING DIVISION

**PORCUPINE**

LAND TITLES / REGISTRY DIVISION

**COCHRANE**

Ministry of Natural Resources  
Land Management Branch

ORIGINAL COMPILATION JULY 1984

REVISED ACTIVATED MARCH 24, 1993

Number **G-3994**





**MAP SYMBOLOGY**

	Pipeline (above ground)
	Railroad
	Single Track
	Double Track
	Abandoned
	Approximate
	Road
	Highway, County
	Township
	Access (road of doubtful maintenance or substandard driveway)
	Trail, Back Road (Garage drive)
	Repis
	Double line river with multiple rapids
	Double line river with multiple rapids
	Reservoir
	River, Stream, Canal
	Approximate boundary
	Location of flow
	Rock
	Spot Elevation (flood elevation) 300.0
	Spot Elevation (flood elevation) 300.0
	Tower
	Transmission Line
	Pole
	Pylon
	Tunnel
	Utility Poles
	Wharf, Dock, Pier
	Wooded Area

**AREAS WITHDRAWN FROM DISPOSITION**

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
EXPLORATORY LICENCE OF OCCUPATION #14920				
ISSUED JULY 06, 1989 ORDER #C-P 5/89 NR				

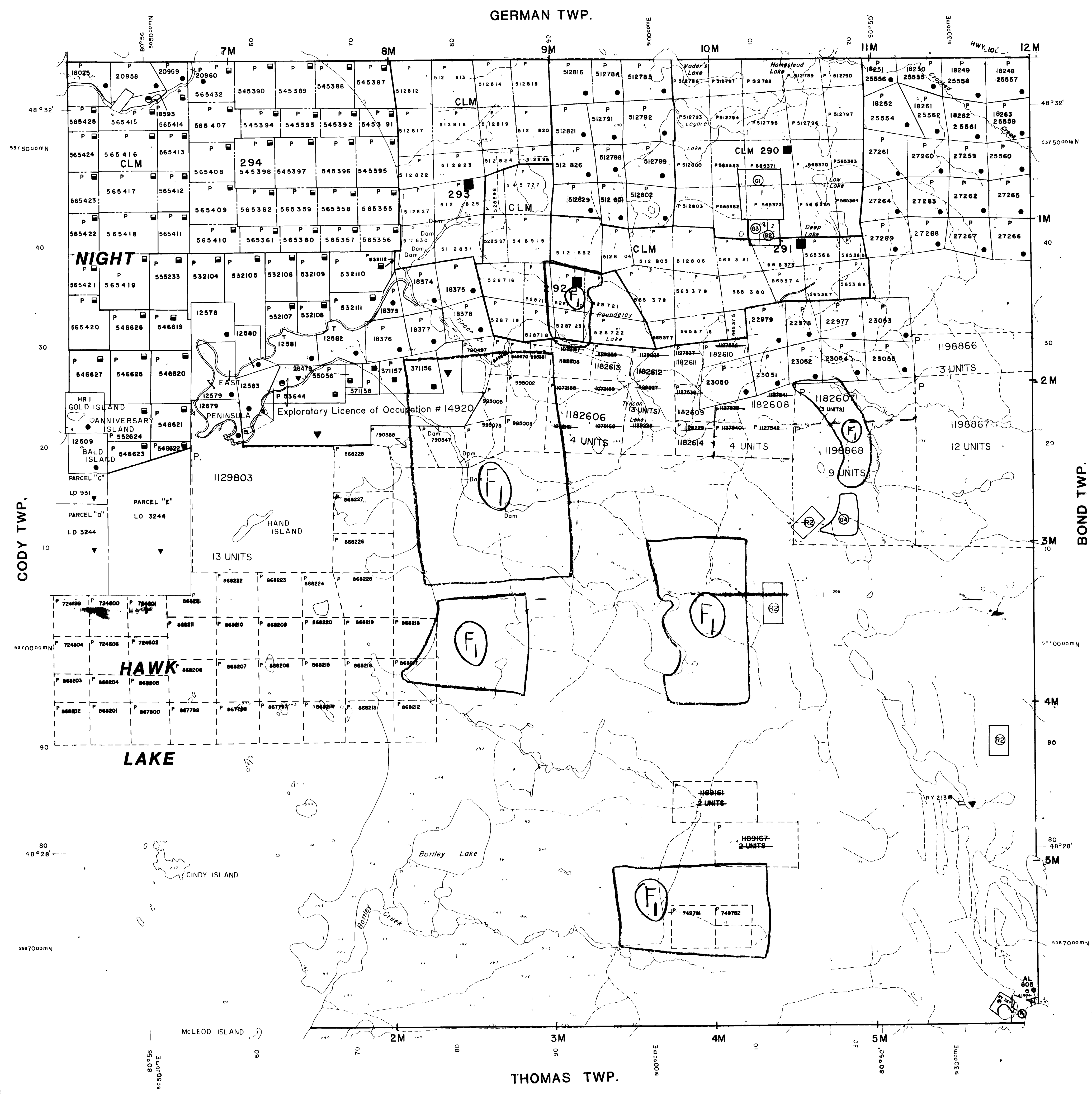
① - SITE PREPARATION 06/02/83, 77094 V.8

② - SURFACE AND MINING RIGHTS WITHDRAWN FROM PROSPECTING, STAKING OUT, SALE OR LEASE SECTION 35, THE MINING ACT, R.S.O. 1990 (FOREST TEST PLOTS)

③ THIS TWP IS SUBJECT TO FOREST ACTIVITY IN 1994/95 FURTHER INFORMATION AVAILABLE ON FILE

**SAND AND GRAVEL**

- ② AGGREGATE PERMIT - ISSUED AUG.2/88
- ③ AGGREGATE PERMIT - ISSUED FEB.9/89
- ④ AGGREGATE PERMIT - ISSUED NOV.21/90
- ⑤ AGGREGATE PERMIT - ISSUED SEPT.21/91

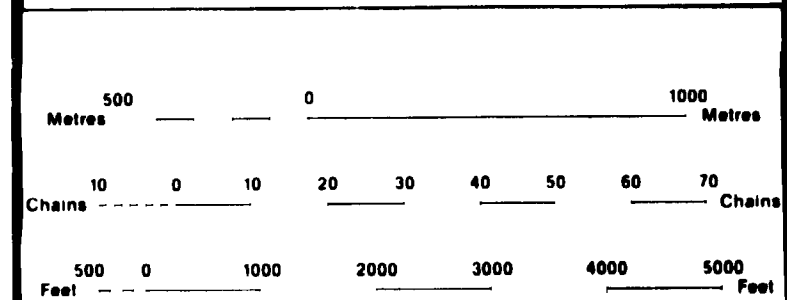


**LEGEND**

HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS, ETC.	
UNSURVEYED LINES	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC.	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON PERENNIAL STREAM	
FLOODING OR FLOODING RIGHTS	
SUBDIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH OR MUSKEL	
MINES	
TRAVERSE MONUMENT	

**DISPOSITION OF CROWN LANDS**

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LEASE, SURFACE & MINING RIGHTS	
SURFACE RIGHTS ONLY	
MINING RIGHTS ONLY	
LICENCE OF OCCUPATION	
ORDER IN COUNCIL	
RESERVATION	
CANCELLED	
SAND & GRAVEL	



SCALE 1:20 000  
GRID ZONE 17

Reserve flooding rights on Night Hawk Lake to Ontario Hydro to elevation 903.5', T.B.N.D.Ry. datum.

**ISSUED**  
DEC 15 1994  
PORCUPINE MINING DIVISION

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

TOWNSHIP  
**MACKLEM**  
M.N.R. ADMINISTRATIVE DISTRICT  
**TIMMINS**  
MINING DIVISION  
**PORCUPINE**  
LAND TITLES / REGISTRY DIVISION  
**COCHRANE**

Ministry of Land Management  
Ontario Resources Branch

ORIGINAL COMPILATION JULY 1984  
REVISED/ACTIVATED APRIL 15/93 BY DC  
Number **G-3997**