

MAP NO.: ASSESSMENT REPORT  
115G 6 PROSPECTUS  
CONFIDENTIAL  
OPEN FILE X

DOCUMENT NO: 093112  
MINING DISTRICT: WHITEHORSE  
TYPE OF WORK: GEOPHYSICS  
DIAMOND DRILLING

REPORT FILED UNDER: NATHAN MINERALS INC.

DATE PERFORMED: 1989

DATE FILED: 1993

LOCATION: LAT.: 61°22'N

AREA: BURWASH CREEK

LONG.: 139°18'W

VALUE \$: EIP89-053

CLAIM NAME & NO.:

EL 36, 37, 39, 40, 42, 44, 46-48, 71, 105, SUE 2  
JAN 4-6, 19, 20, 29, 30, 43, 44, 49, 51, 89-90, NAN 3, 5, 6,

WORK DONE BY: L.B. HALFERDAHL

WORK DONE FOR: NATHAN MINERALS INC.

DATE TO GOOD STANDING:

REMARKS: 10 DIAMOND DRILL HOLES FOR 730.45 M.


EXPLORATION INCENTIVE PROGRAM - YTG

Yukon Energy, Mines and Resources Designation Number EIP 89053

**093112**  
NATHAN MINERALS INC.  
1989 DIAMOND DRILLING AND  
ACCESS TRAIL ON QUARTZ CLAIMS  
NEAR BURWASH CREEK, YUKON

Work on Claims

EL 36, 37, 39, 40, 42, 44, 46-48, 71, 105; JAN 4-6, 19, 20, 29  
30, 43, 44, 49, 51, 89-90; NAN 3, 5, 6; SUE 2

Whitehorse Mining District

Geographic Coordinates (Centre of Property)

61° 22'N  
139° 18'W

NTS Sheet 115 G/6

by

L.B. Halferdahl, Ph.D., P.Eng.

1990 02 23

Work done from 1989 07 05 to 1989 11 29

Halferdahl & Associates Ltd.  
18, 10509 - 81 Avenue  
Edmonton, Alberta  
T6E 1X7

*10 holes  
750.45 m*

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Exploration of the quartz claims extending from Tatamagouche and Burwash Creeks to beyond Duke River in southwestern Yukon continued during the 1989 exploration season. It consisted of line cutting for geophysical surveys, GENIE and magnetometer surveys, minor geological mapping, construction of and improvements to access trails, and 730.45 m of diamond drilling in 10 holes. Originally only very limited drilling was planned, but with the ease of exploring on mineral claims in Yukon compared with extreme difficulties with Land Use in the Northwest Territories, drilling that had been planned for NWT was diverted to Yukon late in the season. This report describes the drilling of nine holes and the construction of access trails to them.

As information on the geographic and geological settings, and references have been detailed in assessment reports filed with Indian and Northern Affairs Canada, sections dealing with these topics have been omitted. The property has recently been nearly doubled in size to 607 claims but details on the new claims are still awaited from the Mining Recorder (Appendix 2).

Parts of an access trail, totalling about 9.8 km, to drillsites were improved and other parts newly constructed by means of a D8 bulldozer, a JCB hoe and loader, and a 6-yard Ford dump truck.

Core recovery was very low because of thick overburden or the blocky and cleaved nature of the very hard bedrock or both in holes 89-2 to 89-8. Some were abandoned short of their planned depths because of drilling difficulties. Caving overburden containing abundant serpentine forced abandoning hole 89-9 at a depth of 72½ m while still in overburden.

The most prominent GENIE anomaly, termed anomaly M, is caused by a layer of graphite in intermediate to basic volcanics.

Another GENIE anomaly may be caused by sulfides in a thick unit of mostly black tuff, here termed the Gopher Member. Up to four layers or zones with anomalously high concentrations of gold are present in the Gopher Member. In most drillholes gold does not appear to be correlatable with copper, lead, zinc, or molybdenum, but anomalously high concentrations of these metals are present in some holes. In drillholes at increasing distances westerly from the Golden Gopher Slope, anomalous

concentrations of zinc and molybdenum are present in 89-6, roughly coincident anomalously high concentrations of gold, silver, lead, zinc, and molybdenum in 89-8, and roughly coincident anomalously high concentrations of gold, silver, zinc, and molybdenum in 89-7. The highest concentration of gold in all core samples is 1072 ppb from drillhole 89-7. The Gopher Member warrants further investigation.

### 3.0 ACCESS TRAIL

During 1989 parts of the previous access trail were improved by building and widening grades, excavating ditches, and minor gravelling. Part of the previous access trail (a winter road) was rerouted to dryer ground. Two log culverts were constructed, and cast-iron pipes installed at appropriate places for cross drains. Additional culverts and drains are needed. In general, the trail is 4 to 5 m wide; depending on topography and soil conditions it includes sidehill cuts, cut and bladed gravel ridges, and lengthy stretches of material pushed up from one or both sides with later flattening and smoothing to make a grade passable for 4-wheel-drive vehicles, particularly when frozen. The equipment used for this work included a D8 bulldozer, a JCB hoe and loader, and a 6-yd Ford dump truck.

Work was done on the part of the access trail from where it branches off the road up Bea Creek to near Lake One on the Burwash Uplands (Fig. 3.1 and 3.2), and minor work on the crossings of 101 and 105 Pups west of Fig. 3.2, on the part of the trail constructed in 1987. The crossing of 105 Pup is in the valley of Burwash Creek.

A brief account of the work follows. In its distances from the Bea Creek road to Frying Pan Creek were measured by means of a topofil. Beyond Frying Pan Creek they have been scaled from Fig. 3.1 and 3.2.

<u>Metrage</u>	<u>Description</u>
0	start of trail to Burwash Uplands at its intersection with road up Bea Creek
0-39	previous trail regraded and gravelled
39	log culvert across Bea Creek installed, and covered with fill and gravel
39-348	newly graded and ditched by pushing material up
348	intersection with old trail
348-411	old trail regraded and ditched
411	cross drain installed

<u>Metrage</u>	<u>Description</u>
411-588	old trail regraded and ditched
588-634	old trail regraded
625	intersection of old high trail
634	cross drain installed
634-763	old trail regraded
763-897	old trail regraded and ditched
897-930	old trail regraded
930-995	old trail regraded and ditched
995	cross drain installed
995-1228	old trail regraded
1228	previous log culvert on Martin Creek
1228-1381	old trail regraded
1381-1511	old trail regraded and ditched
1511	West Bea Creek (ford at present; culvert probably needed); original course of West Bea Creek diverted into ditch on west side of trail for about 90 m
1511-1561	old trail regraded
1561	low point (needs cross drain)
1561-1780	newly graded and ditched
1780	Gopher Creek (needs cross drain); location approximate
1780-1998	newly graded and ditched
1998-2607	old grade on sidehill (Golden Gopher Slope) widened and smoothed
2607-2655	old trail regraded and ditched
2655	low point (needs cross drain)
2655-2956	old trail regraded and ditched
2956-3184	constructed in 1988 by side cutting gravel ridge
3184	Frying Pan Creek just above confluence with Frying Pan Pup (ford at present: no plans to change because of gravelly bed and no water flowing even after heavy rains in 1988)
3184-3905	minor improvements of gradient mostly on gravel ridges
3905	intersection with old winter road
3905-4530	newly cut and bladed mostly along gravel ridge
4530-5625	newly graded by pushing material up and smoothing
5625	log culvert across Upper Frying Pan Creek installed, and covered with fill

<u>Metrage</u>	<u>Description</u>
5625-7345	newly graded mostly by pushing material up and smoothing, some sections bladed into gravel
7345	ford on 30 Pup: smooth gravel pavement about 10 m wide in creek bed
7345-7705	newly bladed to gravel
7705	intersection with old winter road
7705-8260	old trail recut to gravel mostly on ridge
8260-9800	newly graded by pushing material up and smoothing along route of old winter road
9800	beginning of grade constructed in 1987

## 4.0

## DIAMOND DRILLING

Mobilization for the drilling program started on October 10, 1989 and ended with closing the camp on November 29, 1989. The drilling was to test and evaluate the GENIE anomalies discovered in the latter part of the 1988 season, and in the 1989 season. If time and other factors permitted one or more holes were to be drilled to test the anomalous concentrations of platinum near the SUE trench. Kluane Drilling Ltd. of Whitehorse was contracted for the diamond drilling with a skid-mounted Longyear 38 to be used. Nathan supplied a D8 bulldozer for moving the drill, preparing drillsites, and access thereto, and a camp for the crew.

Ten holes were drilled for a total of 730.45 m as follows:

<u>Gold on or near Golden Gopher Slope</u>				<u>Platinum at SUE Trench</u>	
89-1	131.67 m	89-5	88.39 m	89-9	72.54 m
89-2	44.20	89-6	66.14	89-10	79.25
89-3	46.33	89-7	71.93		
89-4	47.09	89-8	82.91		

Except for holes 89-1 and 89-10 core recovery was very unsatisfactory. A very hard siliceous tuff unit, either blocky or cleaved, caused most of the problems. Permafrost is present in the almost ubiquitous boulder tills but was generally not more than 15 m thick. Its temperature was close enough to freezing that no salt or other material was needed to lower the freezing temperature of the drilling water. In hole 89-6, water-bearing sand and gravel below the frozen till caused problems, as did the depth of overburden in some holes. Caving serpentine and copious serpentine in the overburden at the SUE trench forced abandoning both holes there before reaching their targeted

depths. Information from hole 89-10- is not yet complete so its log and analyses of samples from it are not included here. A cold snap in mid-November interrupted the drilling for almost one week.

The lithological logs of nine drillholes are in Appendix 1 along with tabulations of the analyses of samples. In some holes sludge samples were collected and analyzed, particularly when core recovery was low. All samples were analyzed by standard atomic absorption methods, with gold being preconcentrated by fire assay methods, at Northern Analytical Laboratories Ltd. in Whitehorse. Northern Analytical Labs advised that the digestion of molybdenum may not be complete. Further, in some of their analytical reports, concentrations for molybdenum and nickel appear to have been interchanged. Hence, appropriate changes for molybdenum and nickel have been made in the tabulations of analyses accompanying the drill logs, pending checking.

#### 4.1 Drillhole 89-1

Drillhole 89-1 was drilled to 131.67 m to evaluate the eastern end of GENIE anomaly M. It intersected andesites, dacite, and andesitic dacite, graphite, diorite, and porphyritic diorite, with gabbro near its bottom. A graphite layer 1.53 m thick was intersected from 46.63 to 48.16 m which contained 46 ppb gold. It appears to be the cause of GENIE anomaly M there. A zone with 1 to 2 per cent disseminated pyrite was intersected from 48.16 to 61.26 m. The higher concentrations of gold in this interval are as follows:

48.16-49.39 m	dacite	135 ppb gold
50.75-52.27 m	andesite	345 ppb gold
55.47-56.39 m	andesite	346 ppb gold
57.30-57.76 m	andesite	1025 ppb gold

#### 4.2 Drillhole 89-2

Hole 89-2 was drilled to 44.20 m to investigate the anomalous concentrations of gold and lead in soil samples on geochemical soil traverse line 50, run in 1987. Line 50 runs down the Golden Gopher Slope and crosses the main access trail to the Burwash Uplands a few metres south of the contact of a gabbro intrusive and the interbedded black tuffs and black vitreous tuffs of the Gopher Member, which also includes thin graphitic zones. Preparation of a drillsite at this location involved widening the access trail by cutting into the Gopher Member with the D8 bulldozer. The improved exposure of the Gopher Member resulting from this cutting revealed the

strike and dip of bedding as  $135^{\circ}/45^{\circ}$ NE with cleavage perpendicular to bedding, and some orange-brown gossan. At the black tuff-gabbro contact is chloritic schist with pronounced schistosity with strike and dip of  $135^{\circ}/45^{\circ}$ NE. Total field magnetic responses measured with a Scintrex MP-2 magnetometer show a slight rise across the Gopher Member.

In hole 89-2, less than 5 per cent of the core was recovered, due to the hardness and cleaved nature of the Gopher Member. The little core recovered indicated that this part of the Gopher Member consists of grey and black tuffs, black vitreous tuffs, and a thin interbed of limestone. Hole 89-2 had to be abandoned at 44.20 m due to very difficult downhole conditions when no further advance was possible.

#### 4.3 Drillhole 89-3

Drillhole 89-3 was drilled vertically at the same site as drillhole 89-2 in hopes of improved core recovery. Sludge samples were collected. Core recovery improved to 23 per cent. A few anomalous gold concentrations were obtained as follows:

<u>Metrage</u>	<u>Core</u>	<u>Sludge</u>
28.04-29.57	93 ppb Au	44 ppb Au
29.57-31.09	81	97
31.09-32.61	76	73

#### 4.4 Drillhole 89-4

Drillhole 89-4 was drilled to investigate GENIE anomaly L on line L. Anomaly L does not have a magnetic coincidence, but appears to lie at the southern edge of magnetic highs within the Gopher Member. Unit L within the Gopher Member is defined by twin magnetic highs. Anomaly L lies towards the southern edge of the southern high whereas drillhole 89-4 intersected dark-grey to black massive siliceous tuffs with 1 to 5 per cent pyrite as veins, disseminations, and blebs from 27.43 to 42.70 m and 1 to 2 per cent pyrite from 42.70 to 47.09 m on the southern flank of the northern high.

Some of the intersections with higher gold concentrations follow:

18.29-21.34 m	198 ppb Au (overburden sludge)
21.34-24.38 m	45 ppb Au (overburden sludge)
24.38-27.43 m	74 ppb Au (overburden sludge)
32.00-33.71 m	626 ppb Au (core)

Perhaps the peak of the northern magnetic high should be checked for economic concentrations of gold.

Hole 89-4 had to be abandoned at 47.09 m before it reached the expected position of anomaly L because the downhole conditions made further advance impossible.

#### 4.5 Drillhole 89-5

When drillhole 89-4 had to be abandoned, the drill was moved to 0164N on line L, where drillhole 89-5 was collared. It intersected black tuff of the Gopher Member, minor limestone, and andesite at the bottom. Some of the higher gold concentrations in the core follow:

62.79-64.31 m	339 ppb Au
64.92-65.84 m	344 ppb Au
67.06-68.28 m	448 ppb Au

#### 4.6 Drillhole 89-6

Drillhole 89-6 was drilled to test GENIE anomaly M near its western end. Anomaly M has a strike length of about 1½ km. Five layers or zones of graphite were intersected as follows:

30.78-37.49 m
41.76-42.67 m
43.28-51.82 m
52.43-54.56 m
61.42-62.18 m

The only anomalous concentration of gold is 188 ppb from 61.42 to 62.18 m. The graphite zones appear to be repeated by faulting as they are much brecciated and most are associated with zones of soft clayey alteration. Gabbros and gabbroic andesites are present towards the bottom of the hole.

#### 4.7 Drillhole 89-7

Drillhole 89-7 was drilled to investigate a GENIE anomaly on strike with anomaly K on line K. It intersected graphite, andesites, and black tuffs similar to those in the Gopher Member. Overburden is very thick, perhaps downhole to 56.08 m. Virtually no core was recovered from 56.08 to 65.53 m, but this interval is surmised to be andesite from the few core fragments recovered, which also included some acidic to intermediate greyish-green welded tuffs. At the bottom of this hole from 68.58 to 71.93 m are vitreous black tuffs of the Gopher Member with minor disseminated pyrite. Some of the higher gold concentrations in the samples follow:

59.44-60.96 m	1081 ppb Au (sludge) in andesites, acidic to intermediate welded tuff
60.96-62.48 m	227 ppb Au (sludge) same as 59.44-60.96 m

65.53-67.06 m	102 ppb Au (core) in vitreous black tuff
67.06-67.97 m	662 ppb Au (core) in vitreous black tuff
68.58-69.79 m	270 ppb Au (core) in vitreous black tuff
69.80-70.10 m	1072 ppb Au (core) in vitreous black tuff
70.10-70.41 m	347 ppb Au (core) in vitreous black tuff

Hole 89-7 had to be abandoned at 71.93 m due to sloughing and caving which prevented further advance.

#### 4.8 Drillhole 89-8

Hole 89-8 was drilled to investigate a GENIE anomaly at 0625N on line 4000 W. This anomaly has a strike length of some 200 m. It intersected graphite with acidic interbeds, graphites, andesites, gabbro, a latite porphyry dyke(?), and a thin black calcareous interbed. Some of the higher gold concentrations in the samples follow:

34.44-35.36 m	161 ppb Au	(overburden sludge)
37.19-39.01 m	260 ppb Au	graphite-tuff interbeds (core)
39.01-40.23 m	203 ppb Au	graphite-tuff interbeds (core)
40.23-41.76 m	104 ppb Au	graphite-tuff interbeds (core)
43.89-44.81 m	131 ppb Au	graphite (core)
68.58-69.49 m	42 ppb Au	graphite (core)
69.19-70.71 m	244 ppb Au	black calcareous interbed (sludge)
70.10-71.63 m	48 ppb Au	black calcareous interbed (core)

#### 4.9 Summary of Drilling Near and West of the Golden Gopher Slope

Except for drillhole 89-1, core recoveries were not satisfactory, with the difficulties arising from thick overburden, some with unconsolidated water-bearing sands below permanently frozen till, and the blocky and cleaved nature of much of the very hard bedrock. Enquiries are being made to learn if the use of more sophisticated drilling fluids will improve core recoveries in future drilling on the property.

GENIE anomaly M is caused by a layer of graphite within intermediate to basic volcanics.

GENIE anomaly L may be caused by sulfides within the Gopher Member, which is a thick layer of mostly black tuffs and seems to contain two to four intervals with anomalous gold concentrations. The Gopher Member warrants additional investigation. Detailed magnetometer surveys are expected to be useful in continuing to trace it beneath the thick overburden prior to drilling.

Casual inspection does not reveal obvious correlations between analyses of core and sludge samples for corresponding intervals, nor between concentrations of the various metals determined, except for analyses from drillhole 89-7, the most westerly. In it, concentrations of gold, silver, zinc, and molybdenum are probably correlated. They are more consistently higher than those of the other drillholes. Further investigation in this direction is warranted.

#### 4.10 Drillhole 89-9

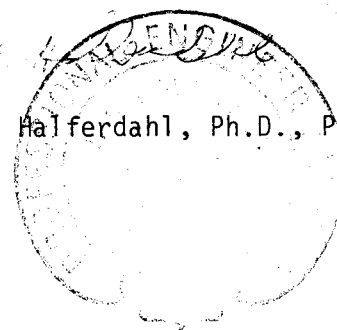
Hole 89-9 was spotted about 165 m south of the most southerly 1987 percussion hole with anomalous platinum concentrations in hopes of obtaining information on the stratigraphy of the ultramafic intrusion as well as on the platinum. After penetrating about 15 m of permanently frozen boulder till, it encountered what appeared to be unconsolidated unfrozen overburden which caved into the hole and made drilling very difficult. Although this unconsolidated material is recorded as overburden, such material cannot be distinguished with certainty from caving serpentine within the ultramafic intrusion. Hole 89-9 was abandoned at 72.54 m where caving and sloughing overburden prevented attempting to drill deeper.

Hole 89-9 lies along a topographic low running westerly from Lake One and continuing beyond two small ponds. If it bottomed while still in overburden, the surface topography, subdued by glacial deposits, appears to coincide with a very deep preglacial channel, perhaps an indication of preglacial relief in the peridotite similar to the present relief in peridotite in Tatamagouche Canyon.

Respectfully submitted,

L.B. Halferdahl, Ph.D., P.Eng.

Edmonton, Alberta  
1990 02 23



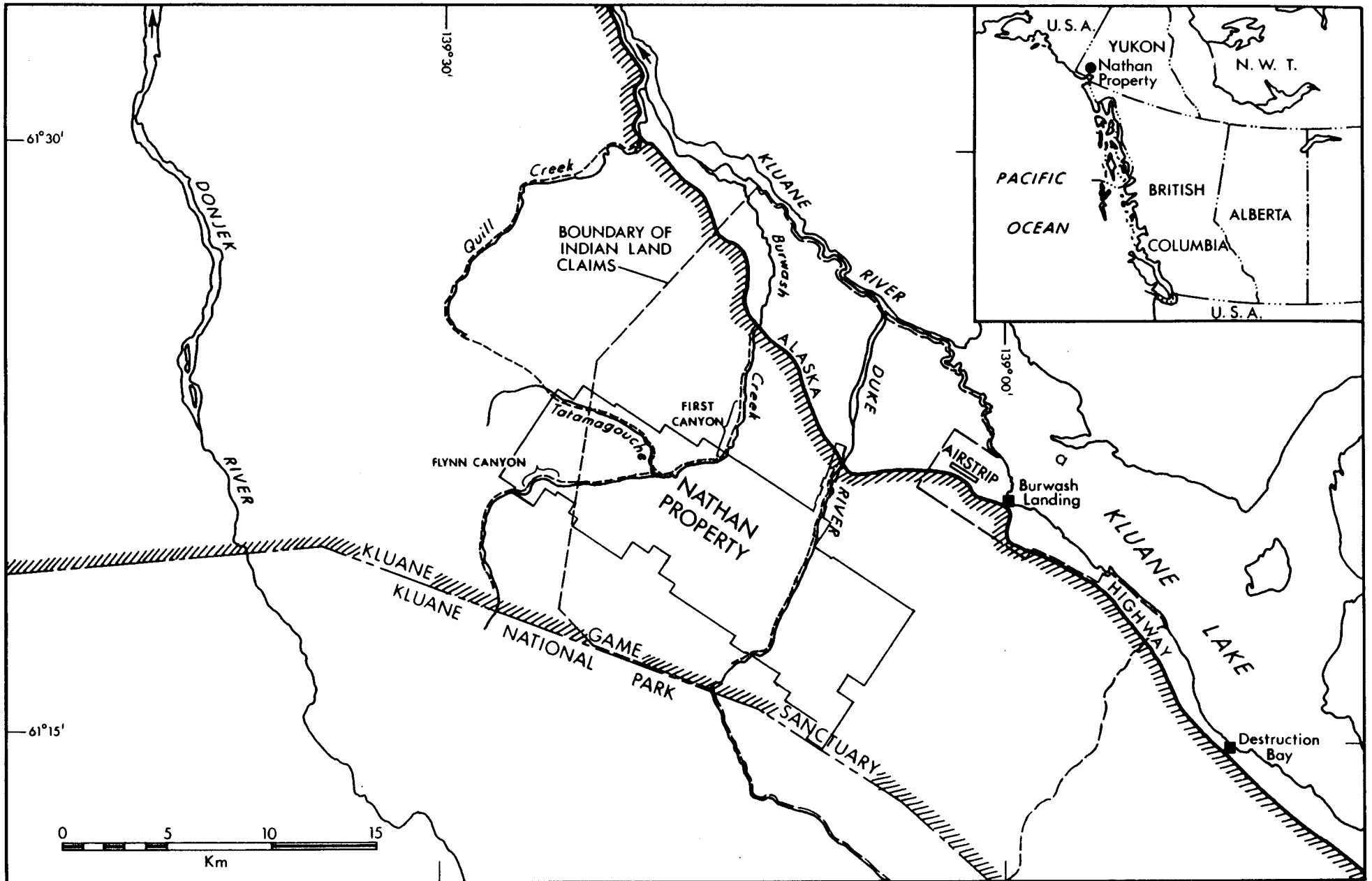
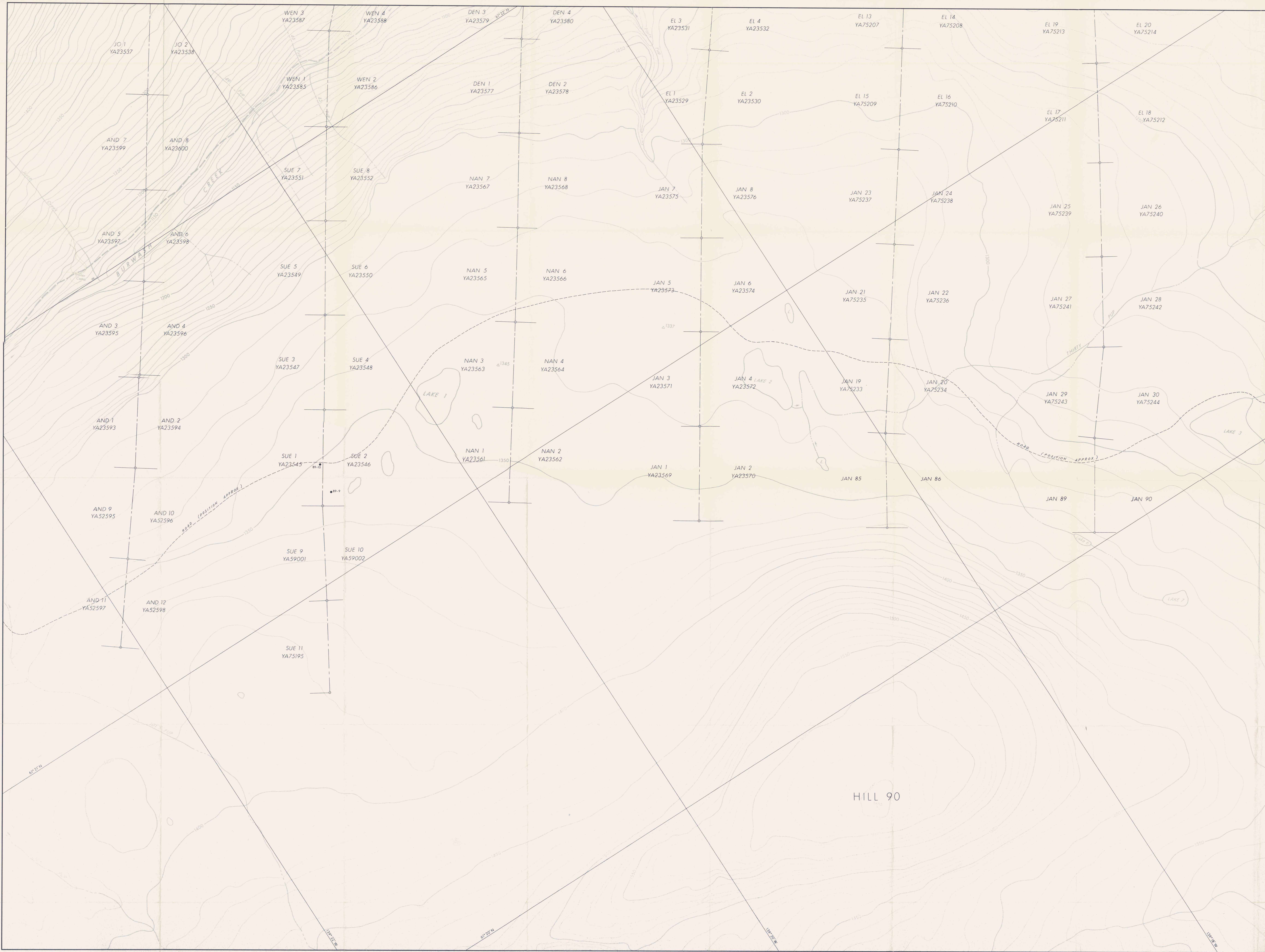
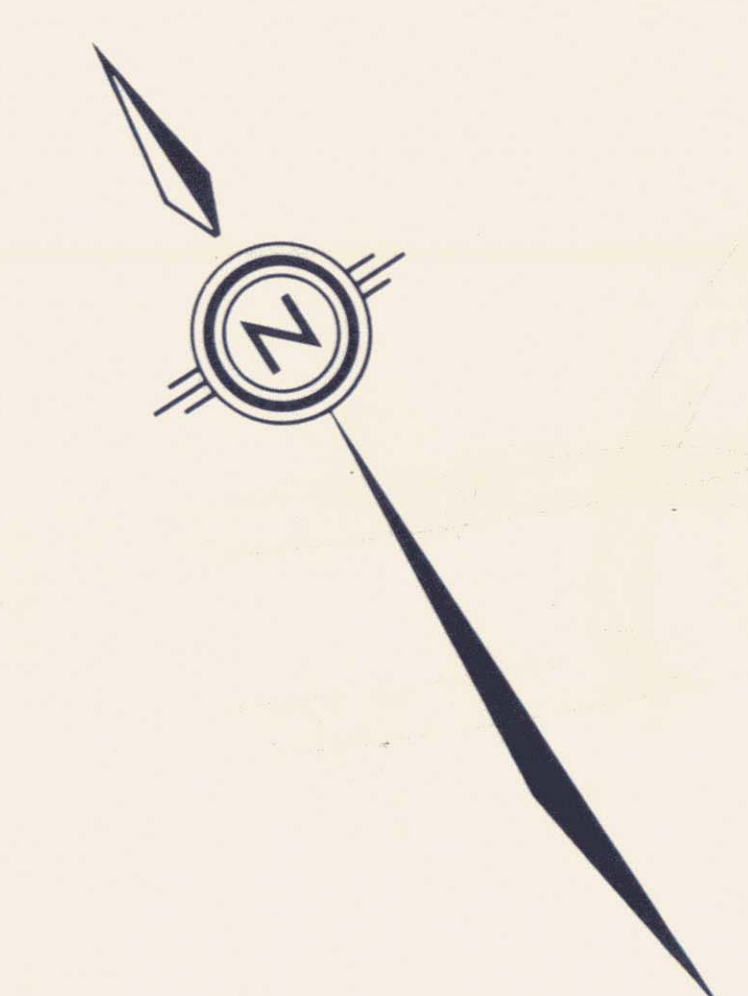


Fig. 1.1 Location and Index Map



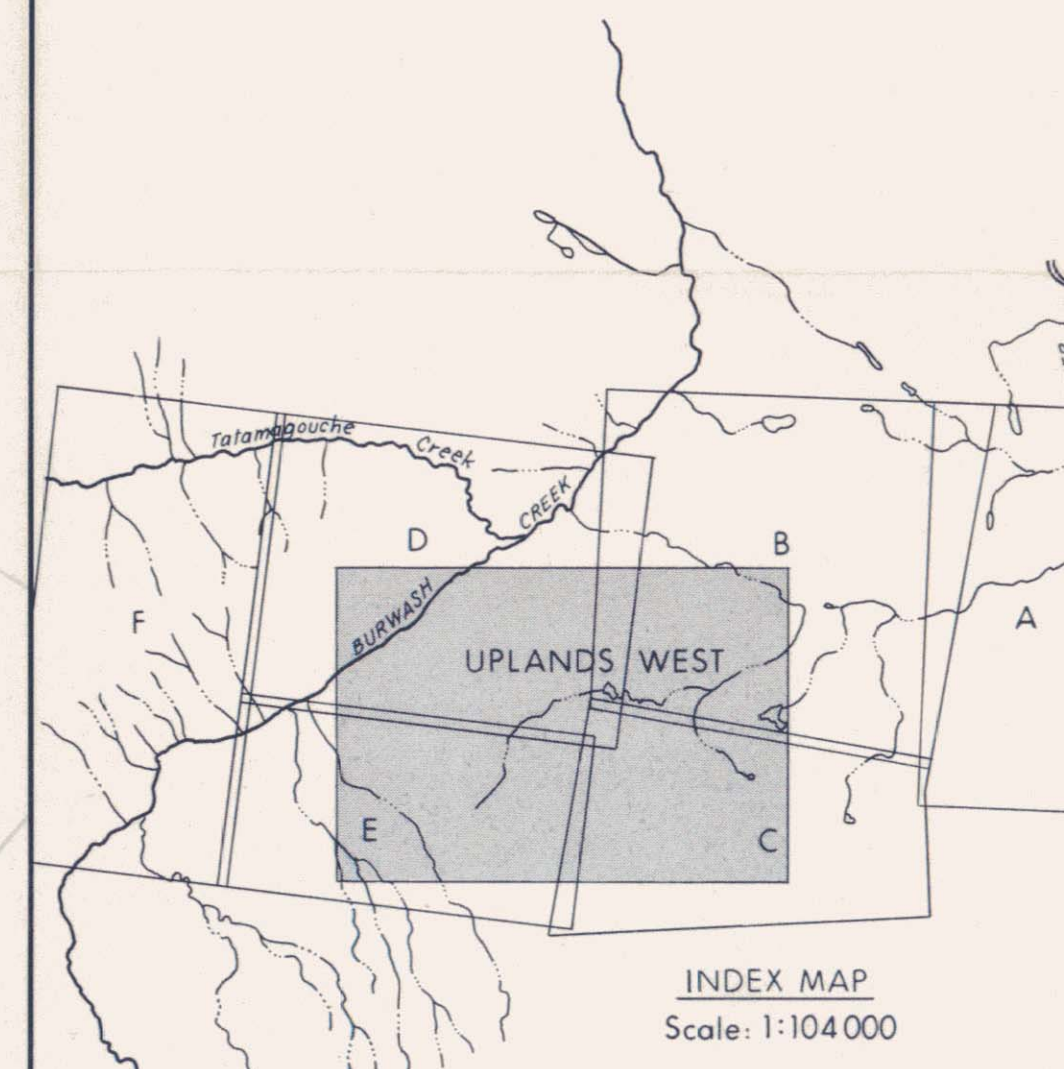


**SYMBOLS**

Road .....  
 Quartz claim post .....  
 Claim line .....  
 Diamond drillhole location with number .....  
 92.3, 99.9

**NOTES**

Elevation contours are metres a.m.s.l. Contour interval is 10m.



093112  
 DWG 170  
**NATHAN MINERALS INC.**  
**HALFERDAHL & ASSOCIATES LTD.**  
**EDMONTON, ALBERTA**

REVISIONS	BY	DATE

**Fig. 3-2 Diamond Drill-holes and Access Trail on Uplands West Sheet.**

0 100 200 300 400  
 METRES  
 Scale: 1:5000 1990.02

APPENDIX 1: LITHOLOGICAL LOGS FOR DIAMOND DRILLHOLES  
AND ANALYSES OF SAMPLES

89-1	.....	A2
89-2	.....	A6
89-3	.....	A8
89-4	.....	A11
89-5	.....	A13
89-6	.....	A18
89-7	.....	A20
89-8	.....	A22
89-9	.....	A24

Company: Nathan Minerals Inc.  
 Drillhole: 89-1  
 Azimuth: 211<sup>0</sup>  
 Inclination: -55<sup>0</sup> at collar  
 Length: 131.67 m  
 Core recovered: 90.95 m, 78.9%  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: north of Golden Gopher Slope,  
 claim EL 48  
 Coordinates: Gopher Grid: 0794N, 2880W  
 Elevation: 1085 m (from 1:5000 topo map)  
 Drilled: 1989 10 12 to 16  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To determine the cause of GENIE anomaly M. Hole 89-1 was spotted near the eastern end of anomaly M, just off the main access trail to the Burwash Uplands.

Note: Analyses of core samples from 46.63-61.26 m are tabulated at the end of this log.

Metrage	Interval	Description
0- 16.46	16.46	<u>Overburden</u> to 15.85 m; cased to 16.46 m
16.46- 18.39	1.93	<u>Andesite Flow</u> , brownish-green, weathered and oxidized
18.39- 25.91	6.52	<u>Andesite Tuff</u> 18.39-21.03 m greenish-grey, interbedded with thin flows, mafic clasts 1-5 mm, flow contact at 45 <sup>0</sup> CA with zones of fine calcite veins 18.39-18.54 m flow with calcite veins at 45 <sup>0</sup> CA 19.66-19.96 m flow contact at 50 <sup>0</sup> CA 19.96-21.03 m fractured 21.03-25.91 m light-green-grey, subrounded and subangular mafic clasts 2-5 mm, few 15-20 mm 21.09-21.33 m calcite vein parallel to bedding(?) at 30 <sup>0</sup> CA, minor fine calcite veins throughout
25.91- 46.63	20.72	<u>Andesite Flows</u> , greenish-green, minor tuffaceous interbeds, few fine calcite veins throughout 27.14-27.43 m flow contact and calcite veins subparallel at 17 <sup>0</sup> CA, banded 27.43-32.92 m fractured, sheared, partly altered to greenish clay 32.92-33.22 m quartz vein at 17 <sup>0</sup> CA 33.22-34.44 m clayey altered zones 34.93-35.36 m quartz vein, upper contact 70 <sup>0</sup> CA, lower 20 <sup>0</sup> CA

Company: Nathan Minerals Inc.  
Drillhole: 89-1

Property: Burwash Creek, Yukon  
Page: 2

Metrage	Interval	Description
		35.36-35.81 m and 35.96-36.88 m clayey alteration
		38.51-38.84 m bedded mafic tuff at 40 <sup>o</sup> CA
		41.00-44.68 m calcite veins and blebs to 1-2 mm
46.63- 48.16	1.53	<u>Graphite</u> , black, carbonaceous, soft, clayey, altered (?), bedded at 60 <sup>o</sup> CA
48.16- 48.87	0.71	<u>Andesite Tuff</u> , greenish-grey, bedded(?) at 50 <sup>o</sup> CA
48.87- 50.75	1.88	<u>Dacitic and Andesitic Tuff</u> 48.87-49.17 m light-green-grey dacitic, altered clayey 49.17-49.68 m medium-greenish-grey andesitic, bedded(?) at 60 <sup>o</sup> -65 <sup>o</sup> CA 49.68-49.80 m dacitic as above 49.80-50.65 m andesitic as above 50.65-50.75 m dacitic as above
50.75- 55.17	4.42	<u>Andesite Flow</u> , greyish-green, generally massive, minor bedded tuffs at 45 <sup>o</sup> -50 <sup>o</sup> CA
55.17- 56.24	1.07	<u>Andesite Tuff(?)</u> , green, chloritic, altered, soft, clayey, schistose, schistosity/bedding(?) at 30 <sup>o</sup> CA
56.24- 57.15	0.91	<u>Andesite Flow</u> , greenish-grey, massive, calcite veins subparallel to CA at contact
57.15- 57.45	0.30	<u>Andesite Tuff</u> , bedding (?) at 55 <sup>o</sup> CA
57.45- 72.08	14.63	<u>Andesite Flows</u> 57.45-61.57 m dark-greyish-green, minor tuff interbeds 61.57-72.08 m dark- to medium-greyish-green, massive, minor calcite veins to 66.75 m and then increasing to 71.32 m at 45 <sup>o</sup> -90 <sup>o</sup> CA
72.08- 81.08	9.00	<u>Gabbro?</u> , dark-greenish-green, massive, granular, partly altered and crumbly 80.90-81.08 m chilled contact zone(?)
81.08- 90.37	9.29	<u>Dacite Tuff</u> , light-greyish 81.08-86.04 m clastic, cryptocrystalline greyish siliceous fragments and clasts 2-3 mm, few to 10-20 mm 82.26 m mafic tuff interbed at 55 <sup>o</sup> CA

Company: Nathan Minerals Inc.  
Drillhole: 89-1

Property: Burwash Creek, Yukon  
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Metrage	Interval	Description
		82.90 m brecciated graphitic banding at 65 <sup>o</sup> CA
		86.47-90.37 m siliceous, cryptocrystalline
		88.24 m calcite veins at 25 <sup>o</sup> CA
		90.00-90.37 m indurated contact zone
90.37- 92.35	1.98	<u>Porphyritic Dacite</u> , fine-grained greenish-grey matrix with whitish to pinkish feldspar phenocrysts, chilled contacts at 65 <sup>o</sup> CA
92.35- 111.10	18.75	<u>Andesite</u> , greenish-grey agglomerates and minor tuff
111.10- 113.39	2.29	<u>Diorite(?)</u> , fine-grained, lower contact grading to tuff
113.39- 122.83	10.56	<u>Andesite Flow</u> , greyish-green, massive, locally agglomeratic
122.83- 126.47	3.66	<u>Diorite(?)</u> , greyish, very fine to fine-grained, chilled(?) lower contact 124.70-125.12 m quartz vein at 45 <sup>o</sup> CA
126.47- 131.06	4.59	<u>Andesite Flow</u> , greenish-grey, partly gabbroic(?)
131.06- 131.67	0.61	<u>Diorite(?)</u> , as 122.83-126.47 m 130.15-130.67 m altered and brecciated
131.67	-	End of hole

CORE SAMPLES AND ANALYSES FROM DRILLHOLE 89-1

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
46.63-48.16	6451	46	0.8	44	7	64	21	42
48.16-49.38	7831	135	0.3	103	3	79	4	33
49.38-50.29	7908	34	0.5	93	8	46	4	19
50.29-50.75	7909	83	0.3	56	11	38	5	33
50.75-52.27	7832	345	0.4	63	1	35	3	72
52.27-52.73	7910	25	0.1	99	4	48	4	21
52.73-53.64	7911	27	<0.1	82	7	48	3	24
53.64-54.56	7912	35	<0.1	50	6	47	4	23
54.56-55.47	7913	34	0.3	58	8	41	3	25
55.47-56.39	7833	346	0.2	25	1	73	3	15
56.39-57.30	7914	28	0.2	48	6	57	4	20
57.30-57.76	7834	1025	0.4	75	2	51	3	67
57.76-58.52	7915	16	<0.1	190	5	36	4	24
58.52-59.44	7916	15	0.1	117	3	29	4	26
59.44-60.35	7917	58	0.1	159	2	41	2	21
60.35-61.26	7918	43	<0.1	132	4	58	4	37



Company: Nathan Minerals Inc.  
 Drillhole: 89-2  
 Azimuth: 225°  
 Inclination: -47° at collar  
 Length: 44.20 m  
 Core recovered: <2.10 m; <4.8%  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: on Golden Gopher Slope, claim  
 EL 48  
 Coordinates: Gopher Grid: 0390N, 2930W  
 Elevation: 1109 m (from 1:5000 topo map)  
 Drilled: 1989 10 17 to 19  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To test the lead and gold anomalous concentrations in soils on geochemical soil traverse 50.

Note: Drillhole 89-2 was abandoned at 44.20 m when the drill could not advance because of sloughing and caving ground, accompanied by no core recovery.

Analyses of sludge samples from 41.15-44.20 m are tabulated at the end of this log.

Metrage	Interval	Description
0- 10.06	10.06	<u>Tuff</u> , grey to dark-grey, very hard, siliceous, fragments only some abraded round, (rhyolite?)
10.06- 10.67	0.61	<u>Rhyolitic(?) Tuff</u> , greyish, siliceous, cryptocrystalline, sheared and brecciated
10.67- 11.89(?)	1.22	<u>Black Tuff</u> , vitreous, very hard, siliceous, glassy, cleaved fragments only
11.89(?) - 12.19(?)	0.33	<u>Limestone</u> , grey, argillaceous, bedding contact at about 80°CA
12.19- 42.37	30.18	<u>Black Tuff</u> , very hard, siliceous, glassy as 10.67-11.88 m, cleaved fragments only
42.37- 44.20	1.83	<u>Black Tuff?</u> (no recovery)
44.20	-	End of hole

SLUDGE SAMPLES AND ANALYSES FROM DRILLHOLE 89-2

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
41.15-42.67	6452	34	0.1	72	14	33	3	25
42.67-44.20	6453	11	0.4	110	30	76	5	52

## CORE RECOVERY FOR DRILLHOLE 89-2

Interval (m)	Recovery (m)	Interval (m)	Recovery (m)	Interval (m)	Recovery (m)
0 -10.06	<0.50	17.07-19.02	0	34.14-34.75	0.06
10.06-10.67	<0.15	19.02-20.12	<0.11	34.75-36.58	<0.09
10.67-12.19	0.15	20.12-26.21	0	36.58-41.15	0
12.19-13.41	<0.06	26.21-29.26	<0.15	41.15-42.37	0.24
13.41-14.46	0.05	29.26-32.31	0.15	42.37-42.67	0.21
14.46-16.46	0	32.31-32.92	0.12	42.67-43.38	0
16.46-17.07	0	32.92-34.14	0.06		
					<2.10

$$\text{Recovery} = \frac{<2.10}{44.20} \times 100 = <4.8\%$$

Company: Nathan Minerals Inc.  
 Drillhole: 89-3  
 Azimuth: n/a  
 Inclination:  $-90^{\circ}$  at collar  
 Length: 46.33 m  
 Core recovered: <10.65 m; <23.0%  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: on Golden Gopher Slope claim EL 48  
 Coordinates: Gopher Grid: 0390N, 2930 W  
 Elevation 1109 m (from 1:5000 topo map)  
 Drilled: 1989 10 18 to 19  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To attempt to get better core recovery of the Gopher Member.

Note: Analyses of core samples from 22.56-46.33 m and of sludge samples from 0.46.33 m are tabulated at the end of this log.

Metrage	Interval	Description
0- 9.75	9.75	<u>Tuff</u> , greyish, siliceous, very hard, brecciated and sheared
9.75- 15.58	5.83	<u>Black Tuff</u> , dark-grey to black, very hard, siliceous, cleavage fragments and abraded and subrounded core fragments
15.58- 17.37	1.79	<u>Tuff</u> , greyish, siliceous, very hard, brecciated and sheared
17.37- 18.90	1.53	(no recovery)
18.90- 24.84	5.94	<u>Black Tuff</u> , vitreous, glassy vitreous shards (slaty-carbonaceous?), very hard
24.84- 25.15	0.31	<u>Limestone</u> , grey, argillaceous, bedding contacts at about 40°C
25.15- 41.67	16.52	<u>Black Tuff</u> , vitreous, as 18.90-24.84 m
41.67- 46.33	4.66	<u>Black Tuff</u> , dark-grey to grey, slightly calcareous locally, very hard, abundant quartz veins, 1-2% disseminated pyrite throughout
46.44	-	End of hole

## SAMPLES AND ANALYSES FROM DRILLHOLE 89-3

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Core</u>								
22.56-23.47	6691	33	0.7	81	27	110	4	51
24.23-24.84	6692	39	0.8	80	9	29	4	84
24.84-25.15	6693	35	0.4	51	22	127	10	87
25.15-25.45	6694	16	0.2	48	6	31	5	44
28.04-29.57	6823	93	0.6	68	30	93	10	62
29.57-31.09	6824	81	0.5	43	11	75	4	43
31.09-32.61	6825	76	0.5	64	9	71	3	46
41.76-42.37	6695	11	0.3	53	6	17	3	73
42.37-44.81	6696	<10	0.7	65	6	30	2	105
44.81-46.33	6697	18	0.5	63	6	26	2	97
<u>Sludge</u>								
0 -6.71	6454	37	0.1	79	81	201	2	68
6.71- 8.23	6455	47	0.1	106	21	36	2	20
8.23- 9.75	6456	67	0.2	187	51	283	2	23
9.75-11.28	6457	44	0.3	97	12	31	3	23
11.28-12.80	6458	31	0.3	98	5	15	2	30
12.80-14.33	6459	54	0.1	46	7	82	3	69
14.33-15.85	6460	35	0.1	116	6	23	3	28
15.85-17.37	6461	50	0.2	48	5	64	3	33
17.37-18.90	6462	47	0.2	50	4	49	2	33
18.90-20.42	6463	52	0.3	48	5	38	2	56
20.42-21.95	6464	47	0.1	55	9	47	3	43
21.95-23.47	6465	15	0.2	37	7	47	1	36
23.47-24.99	6466	30	0.3	70	9	69	3	52
24.99-26.52	6467	27	0.7	65	6	45	1	95
26.52-28.04	6468	45	0.5	110	43	66	4	72
28.04-29.57	6469	44	0.5	35	7	44	3	45
29.57-31.09	6470	97	0.5	27	5	40	3	46
31.09-32.61	6471	73	0.2	63	11	52	3	47
32.61-34.14	6472	17	0.3	28	13	36	3	42
34.14-35.66	6473	29	0.4	55	6	46	4	73
35.66-37.19	6474	29	0.5	68	15	34	2	89
37.19-38.71	6475	21	0.4	49	5	59	2	40
38.71-40.23	6726	31	0.4	21	8	28	4	44
40.23-41.76	6727	24	0.4	28	12	40	2	47
41.76-43.28	6728	35	0.5	62	19	81	3	53
43.28-44.81	6729	32	0.1	24	6	33	3	42
44.18-46.33	6730	27	0.1	26	7	43	2	51

## CORE RECOVERY FOR DRILLHOLE 89-3

Interval (m)	Recovery (m)	Interval (m)	Recovery (m)	Interval (m)	Recovery (m)
0 - 8.28	0.41	24.54-25.15	0.61	37.19-38.71	<0.30
8.28- 9.14	0.60	25.15-26.52	0.68	38.71-40.23	0.30
9.14- 9.75	0	26.52-28.04	0	40.23-41.76	<0.31
9.75-14.33	0.05	28.04-29.57	0.92	41.76-42.37	0.30
14.33-15.58	0.12	29.57-31.09	0.46	42.37-43.28	0.27
15.58-17.37	<0.09	31.09-32.61	0.61	43.28-44.81	<0.08
17.37-18.90	0	32.61-34.14	0.46	44.81-46.33	0.61
18.90-21.95	1.52	34.14-35.66	0.30		
21.95-24.54	1.04	35.66-37.19	0.61		
					<10.65

$$\text{Recovery} = \frac{<10.65}{46.33} \times 100 = <23.0\%$$

Company: Nathan Minerals Inc.  
 Drillhole: 89-4  
 Azimuth: 225<sup>o</sup>  
 Inclination: -48<sup>o</sup> at collar  
 Length: 47.09 m  
 Core recovered: estimated 5-40%  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: west of Golden Gopher Slope  
 Claim EL 47  
 Coordinates: 15 m E of Line L at 0207N  
 Elevation: 1152 m (from 1:5000 topo map)  
 Drilled: 1989 10 20 to 23  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To determine the cause of GENIE anomaly L on Line L. Drillhole 89-4 was abandoned at 47.09 m because of problems with overburden; casing came apart at 7.92 m and even with H casing over break, the bit kept hanging up at 7.92 m.

Note: Analyses of core samples from 27.43-47.09 m and of sludge samples from 6.10-27.43 m are tabulated at the end of this log.

Metrage	Interval	Description
0- 27.43	27.43	<u>Overburden</u> , boulder till; casing to 18.59 m
27.43- 47.09	19.66	<u>Black Tuff</u> , dark-grey to black, massive, very hard, siliceous, locally oxidized 27.43-42.70 m 1-5% pyrite in veins 42.70-47.09 m 1-2% finely disseminated pyrite with some in blebs to 3-4 mm
47.09	-	End of hole

#### SAMPLES AND ANALYSES FROM DRILLHOLE 89-4

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Sludge</u>								
6.10- 7.62	6913	31	<0.1	425	22	76	5	98
7.62- 9.14	6914	32	0.1	46	7	56	4	48
9.14-10.67	6915	48	0.1	25	1	41	4	51
10.67-12.19	6916	37	0.1	27	7	42	3	42
12.19-13.72	6917	34	<0.1	48	3	45	5	64
18.29-21.34	6918	198	2.3	70	42	270	8	78
21.34-24.38	6919	45	1.5	46	5	48	3	59
24.38-27.43	6920	74	1.7	46	3	144	7	67

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Internal (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Core</u>								
27.43-28.65	6698	<10	0.7	40	6	47	1	32
28.65-29.87	6699	18	0.7	95	6	43	2	30
29.87-31.09	6700	<10	0.6	52	8	59	3	41
31.09-32.00	6898	<10	0.3	40	5	44	3	26
32.00-33.71	6899	626	0.8	41	6	42	5	27
33.71-35.36	6900	14	0.5	32	6	42	3	19
35.36-36.88	6731	<10	0.4	26	6	48	3	25
36.88-38.40	6732	<10	0.4	45	6	55	2	35
38.40-39.93	6733	10	0.6	54	6	71	3	46
39.93-41.45	6734	10	0.9	93	6	133	2	101
41.45-42.98	6735	13	0.7	52	7	192	15	182
42.98-44.50	6736	14	0.5	38	9	251	3	275
44.50-46.02	6737	10	0.6	40	8	233	4	281
46.02-47.09	6738	15	0.6	38	6	240	4	256

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Company: Nathan Minerals Inc.  
 Drillhole: 89-5  
 Azimuth: 213°  
 Inclination: -70° at collar  
 Length: 88.39 m  
 Core recovered: <23.64 m; <35.4%  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: west of Gold Gopher Slope  
 claim EL 47  
 Coordinates: on Line L at 0164N  
 Elevation: 1148 m (from 1:5000 topo map)  
 Drilled: 1989 10 24 to 27  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To attempt to intersect more of the Gopher Member than was intersected in drillhole 89-4.

Note: Analyses of core samples from 21.64-64.92 m and of sludge samples from 21.34-84.12 m are tabulated at the end of this log.

Metrage	Interval	Description
0- 21.64	21.64	<u>Overburden</u> , boulder till; NW casing to 20.73 m
21.64- 44.20	22.56	<u>Black Tuff</u> , dark-grey to black, very hard, siliceous, with 1-2% pyrite in very fine veins and disseminations throughout
44.20- 59.44	15.24	<u>Black Tuff</u> , "shelly", dark-grey to black similar to 21.64-44.20 m but with white quartz-filled shell-like fragments and a few round vesicules(?), bedding at about 50°C 44.20-54.25 m generally massive 44.20-47.85 m 1-2% pyrite in fine veins 53.95-54.41 m 1-2% pyrite in fine veins 54.25-59.44 m "shelly" features becoming more abundant
59.44- 64.31	4.87	<u>Black Tuff</u> , dark-grey to black, massive, very hard, siliceous 1-3% pyrite in fine veins
64.31- 64.62	0.31	<u>Tuff</u> , brownish-grey, very hard, siliceous, pyrite in blebs and a few veins
64.62- 66.14	1.52	<u>Black Tuff</u> , dark-grey with slight greenish tinge, bedding(?) at 60°C; may be grading to andesite(?) 65.23-65.53 m minor pyrite veins
66.14- 66.45	0.31	<u>Mafic Dyke</u> , greenish-grey, fine-grained chilled contacts at 20°C
66.45- 73.15	6.70	<u>Black Tuff</u> , dark-grey to black, massive, very hard, siliceous, 1-3% pyrite in fine veins
73.15- 74.07	0.92	<u>Limestone</u> , medium-greyish-green, massive bedding with chlorite partings at 60°-65°C, calcite veins at 60°-70°C

Company: Nathan Minerals Inc.  
Drillhole: 89-5

Property: Burwash Creek, Yukon  
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Metrage	Interval	Description
74.07- 74.68	0.61	<u>Black Tuff</u> , carbonaceous(?) or graphitic(?), black to dark-grey, cut by abundant calcite veins to appear brecciated and vuggy, 1-2% pyrite in minor veins
74.68- 75.13	0.45	<u>Black Tuff</u> , dark-grey, massive, cut by fine calcite veins at 50°C, 1-2% pyrite in minor veins
75.13- 81.08	5.95	<u>Limestone</u> , dark-grey, earthy appearance, brecciated, calcite veins and 1-2% pyrite in minor veins
81.08- 82.30	1.22	<u>Andesite</u> , greenish-grey, flow(?), bedding at 60°C, 1-2% pyrite in veins
82.30- 83.67	1.37	<u>Black Tuff</u> , dark-grey, massive, very hard, siliceous, bedding at about 60°C
83.67- 84.12	0.76	<u>Graphitic Tuff</u> , dark-grey, earthy-carbonaceous texture, minor calcite, 1-2% pyrite, contacts crushed and deformed
84.12- 85.04	0.92	<u>Black Tuff</u> , similar to 82.30-83.67 m
85.04- 85.34	0.30	<u>Andesite</u> , greenish-grey, massive, gradational upper contact(?)
85.34- 85.65	0.31	<u>Limestone</u> , medium- to light-greenish-grey, massive, chloritic bedding at about 60°C
85.65- 88.39	2.74	<u>Andesite</u> , greenish-grey, massive
88.39	-	End of hole

## SAMPLES AND ANALYSES FROM DRILLHOLE 89-5

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Core</u>								
21.64-23.47	6739	146	0.4	69	5	71	2	81
23.47-24.69	6740	33	<0.1	28	3	55	1	82
26.52-27.13	6741	18	0.3	52	8	93	4	77
33.83-34.44	6742	21	0.2	36	4	101	4	75
34.44-35.36	6743	68	0.4	40	22	122	6	71
35.36-36.88	6744	127	0.1	38	1	101	3	81
36.88-38.40	6745	89	0.2	41	3	112	4	73
38.40-39.93	6746	32	0.3	44	4	102	5	65
39.93-41.15	6747	20	0.2	37	<1	83	2	82
41.15-42.67	6748	32	0.5	37	3	117	4	65
42.67-44.20	6749	63	0.6	49	4	144	2	63
44.20-46.02	6750	40	0.4	39	4	108	3	68
46.02-47.85	6751	39	0.2	33	2	137	4	68
53.95-54.41	6752	43	0.5	30	2	140	1	65
59.74-61.24	6753	25	0.2	33	4	85	<1	72
61.24-62.79	6754	<10	<0.1	42	3	72	1	75
62.79-64.31	6755	329	0.1	47	4	159	<1	80
64.31-64.92	6772	25	0.1	106	5	131	2	126
64.92-65.84	6756	344	0.1	42	3	62	1	66
66.45-67.06	6757	11	<0.1	32	2	125	<1	63
67.06-68.28	6758	448	0.2	41	3	78	3	72
69.49-70.41	6759	37	0.3	35	5	156	1	87
70.41-71.02	6760	14	0.4	35	4	96	4	66
71.78-72.09	6761	54	0.3	32	5	140	4	78
74.07-74.68	6762	30	0.1	39	6	123	<1	7
75.59-76.20	6763	58	0.1	30	4	114	3	77
77.11-77.42	6764	43	0.3	38	<1	438	3	69
77.72-79.25	6765	52	0.4	34	<1	67	<1	67
79.55-80.16	6766	85	0.2	26	3	71	1	69
80.16-80.62	6768	33	0.2	24	6	196	4	65
80.62-81.08	6769	28	0.1	30	3	118	2	74
81.38-81.84	6770	33	0.1	37	3	62	1	59
83.67-84.12	6771	25	0.1	25	3	73	3	62

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Sludge</u>								
21.34-24.38	6773	13	0.3	129	5	90	3	81
24.38-25.91	6774	33	0.3	185	6	187	4	204
26.52-27.74	6776	123	0.6	81	4	105	1	106
27.74-29.26	6777	21	0.6	68	9	89	2	88
29.26-30.78	6778	25	0.3	230	6	73	5	70
30.78-32.31	6779	28	0.5	127	7	81	<1	53
32.31-33.83	6780	14	0.4	114	10	93	4	59
33.83-35.36	6781	<10	0.5	258	13	101	4	60
35.36-36.88	6783	<10	0.4	551	4	93	4	67
36.88-38.40	6784	10	0.2	366	23	240	15	135
38.40-39.93	6785	86	0.8	170	8	160	7	105
39.93-41.45	6786	<10	0.6	150	4	167	1	104
41.45-42.98	6787	<10	0.3	234	4	215	3	119
42.98-44.50	6788	<10	0.6	252	3	201	12	89
44.50-46.02	6782	<10	0.4	162	9	182	3	79
46.02-47.85	6789	<10	0.2	719	7	558	4	212
47.85-49.07	6790	<10	<0.1	278	6	237	3	139
51.82-54.86	6775	14	0.3	166	5	184	5	109
54.86-56.39	6791	<10	<0.1	368	1	323	3	153
56.39-57.91	6792	<10	0.3	244	3	188	2	136
57.91-59.44	6793	17	0.1	220	3	213	5	134
61.26-62.79	6794	37	0.1	59	16	99	6	74
62.79-64.31	6795	<10	<0.1	92	2	163	7	107
64.31-65.84	6796	12	<0.1	56	3	120	7	95
65.84-67.36	6797	<10	<0.1	115	6	143	11	110
67.36-68.88	6798	23	<0.1	90	10	115	10	98
68.88-70.41	6799	56	0.1	116	19	142	11	108
70.41-71.93	6800	<10	<0.1	95	19	101	10	88
71.93-73.46	6812	15	0.2	131	55	105	6	97
73.46-74.98	6813	12	0.2	157	53	134	9	99
74.98-76.50	6814	13	0.1	110	18	160	12	113
76.50-78.02	6815	<10	<0.1	66	49	139	5	97
78.02-79.55	6816	<10	<0.1	67	4	163	2	65
79.55-81.08	6817	10	0.1	130	2	124	5	87
81.08-82.60	6818	<10	<0.1	86	11	83	3	60
82.60-84.12	6819	10	<0.1	117	4	100	<1	75

## CORE RECOVERY FOR DRILLHOLE 89-5

Interval (m)	Recovery (m)	Interval (m)	Recovery (m)	Interval (m)	Recovery (m)
21.64-24.69	<0.15	54.86-55.17	0.31	69.80-70.41	0.18
24.69-26.52	0	55.17-56.08	<0.14	70.41-71.63	0.98
26.52-30.78	0.43	56.08-57.00	0.83	71.63-72.24	0.24
30.78-33.83	0	57.00-58.52	0.91	72.24-73.15	0.82
33.83-34.44	0.12	58.52-59.13	0.12	73.15-73.91	0.76
34.44-35.36	0.14	59.13-59.74	0.55	73.91-74.52	0.24
35.36-39.93	<0.46	59.74-61.26	0.61	74.52-76.20	<1.01
39.93-42.98	<0.61	61.26-62.79	<0.15	76.20-79.25	<2.13
42.98-46.02	0.76	62.79-64.31	0.30	79.25-81.99	<1.37
46.02-47.85	<0.37	64.31-65.23	0.37	81.99-83.82	1.28
47.85-50.90	0	65.23-67.06	0.91	83.83-84.12	0.30
50.90-53.95	<0.15	67.06-67.97	0.18	84.12-88.39	3.84
53.95-54.86	0.64	67.97-69.80	1.28		
					<u>&lt;23.64</u>

$$\text{Recovery} = \frac{<23.64}{88.39-21.64} \times 100 = <35.4\%$$

Company: Nathan Minerals Inc.  
 Drillhole: 89-6  
 Azimuth: 211<sup>o</sup>  
 Inclination: -70<sup>o</sup> at collar  
 Length: 66.14 m  
 Core recovered: 5 to 40% estimated  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: east of Frying Pan Lake  
 claim EL 36  
 Coordinates: Gopher Grid: 0830N, 3800W  
 Elevation: 1205 m (from 1:5000 topo map)  
 Drilled: 1989 10 28 to 31  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To test GENIE anomaly M toward its western end.

Note: Analyses of core samples are tabulated at the end of this log.

0- 28.65	28.65	<u>Overburden</u> 0-14.33 m boulder till 14.33-28.65 m sand, minor gravel
28.65- 30.78	2.13	<u>Bedrock(?)</u> , triconed, not cored; NW casing to 30.78 m
30.78- 37.49	6.71	<u>Graphite Zone</u> , black, carbonaceous, soft, crumbly, altered, clayey, fault(?) zone
37.49- 37.80	0.31	<u>Quartz-Epidote</u> , finely disseminated pyrite
37.80- 41.76	3.96	<u>Acidic Dyke</u> , intrusion(?), greyish-brown, finely crystalline, hard and compact where not cut by quartz veins and carrying disseminated pyrite 37.80-37.95 m brecciated with graphitic fragments
41.76- 42.67	0.91	<u>Graphitic Zone</u> , brecciated, with quartz veins
42.67- 43.28	0.61	<u>Dacite(?) or Welded Tuff(?)</u> , greyish, compact, cut by fine quartz-calcite veins
43.28- 51.82	8.54	<u>Graphitic Zone</u> , black, carbonaceous, more or less altered to soft clayey mass with some greenish alteration, faulted(?)
51.82- 52.43	0.61	<u>Gabbro(?)</u> , greenish, fine crystalline texture with chill zone 52.12-52.43 m altered clayey zone with minor quartz veins
52.43- 54.56	2.13	<u>Graphitic-Gabbro Zone</u> , brecciated, perhaps graphite layer intruded by gabbro
54.56- 61.42	6.86	<u>Andesite(?)</u> , greyish-green, massive, some coarsening to gabbroic texture 61.11-61.42 m fine quartz-pyrite veins
61.42- 62.18	0.76	<u>Graphitic Zone</u> , black, carbonaceous, altered to soft clayey material, brecciated-fault(?) zone with greenish clayey altered gabbro(?)
62.18- 66.14	3.96	<u>Gabbro</u> , greenish, finely crystalline with broken, altered soft clayey sections 62.18-63.70 m brecciated 64.31-66.14 m minor quartz veins, no sulfide
66.14	-	End of hole

## CORE SAMPLES AND ANALYSES FROM DRILLHOLE 89-6

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
37.49-37.80	6801	<10	<0.1	31	<1	29	18	32
37.80-39.32	6802	22	0.9	75	2	33	43	69
39.93-40.54	6803	13	<0.1	60	1	34	22	87
40.54-41.45	6804	19	<0.1	56	2	52	14	55
42.67-43.28	6805	24	0.2	65	1	17	2	180
46.94-47.24	6806	25	0.8	58	2	927	12	116
48.77-50.29	6820	17	1.3	70	9	189	23	57
50.29-51.82	6821	23	1.4	111	10	280	28	77
50.90-51.51	6807	18	0.1	92	3	132	7	76
51.82-53.34	6822	27	1.4	99	12	240	32	66
52.12-52.43	6808	<10	<0.1	74	<1	14	3	103
61.11-61.42	6810	18	0.4	109	<1	28	2	124
61.42-62.18	6809	188	0.3	111	2	22	3	78
62.18-63.70	6811	27	0.1	73	<1	28	<1	272

## NOTES ON CORE RECOVERY

Interval (m)	Remarks
39.32-39.93	little or no core recovered
41.45-42.67	little or no core recovered
43.28-46.94	little or no core recovered
47.24-48.77	little or no core recovered

Company: Nathan Minerals Inc.  
 Drillhole: 89-7  
 Azimuth: 211°  
 Inclination: -70° at collar  
 Length: 71.93 m  
 Core recovered: 5-40% estimated  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: east of Frying Pan Lake  
 claim EL 37  
 Coordinates: Gopher Grid: 0536N, 4200W  
 Elevation: 1197 m (from 1:5000 topo map)  
 Drilled: 1989 11 01 to 04  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To test a GENIE anomaly on strike with GENIE anomaly K which is on line K at 0285N and 4429W of the Gopher Grid.

Note: Drillhole 89-7 was abandoned at 71.93 m because of sloughing and caving which prevented drilling farther.

Analyses of core and sludge samples are tabulated at the end of this log.

Metrage	Interval	Description
0- 51.21	51.21	<u>Overburden</u> 0 -46.02 m boulder till 46.02-46.94 m silt 46.94-47.55 m boulder 47.55-48.77 m silt 48.77-50.44 m boulder 50.44-50.60 m silt and gravel 50.60-50.90 m boulder of rhyolitic ashy tuff, agglomeratic, siliceous acidic fragments in a fine siliceous matrix, perhaps welded tuff 50.90-51.21 m boulders of assorted mafics, volcanics, granite, perhaps crevice in bedrock
51.21- 56.08	4.87	<u>Overburden or Boulders</u> 51.21-51.97 m rhyolitic tuff, light-brownish, weathered, oxidized(?), siliceous acidic agglomerates in siliceous tuff matrix 51.97-56.08 m graphite, black, faulted sheared and altered, contacts not preserved 53.64-56.08 m no core recovered
56.08- 65.53	9.45	<u>Andesite</u> , boulders(?), subrounded and abraded core fragments of mafics, andesites, and light-greyish-green welded tuff, virtually no core recovered
65.53- 67.97	2.44	<u>Black Tuff</u> , dark-grey to black, very hard, siliceous, some fine calcite veins parallel to bedding(?) at 80°CA
67.97- 68.58	0.61	<u>Andesite</u> , plus mafics, perhaps boulders
68.58- 71.93	3.35	<u>Vitric Tuff</u> , black, shards, very hard, minor disseminated pyrite, sheared and fractured 69.80-70.10 m calcite veins 70.41-71.93 m no core recovered
71.93	-	End of hole

## SAMPLES AND ANALYSES FROM DRILLHOLE 89-7

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Core</u>								
50.29-50.60	6921	70	3.0	37	4	131	5	34
50.60-51.21	6922	221	1.0	6	5	92	3	9
51.21-51.97	6923	70	0.8	11	4	48	2	9
51.97-53.64	6924	116	0.8	24	7	83	11	20
65.53-67.06	6925	102	3.5	18	7	39	47	27
67.06-67.97	7826	662	4.2	50	8	265	85	65
68.58-69.80	7827	270	4.8	42	9	443	86	64
69.80-70.10	7828	1072	5.8	17	9	166	43	31
70.10-70.41	7829	347	4.2	51	13	657	40	55
<u>Sludge</u>								
50.29-52.12	6901	49	0.1	34	2	47	4	45
52.12-53.64	6904	61	0.7	435	5	293	17	92
53.64-55.17	6905	53	0.6	734	16	537	19	167
55.17-56.69	6906	39	1.1	565	12	566	29	153
56.69-57.91	6902	48	3.8	97	16	531	54	92
57.91-59.44	6903	33	3.1	68	8	640	56	74
59.44-60.96	7830	1081	3.8	61	12	390	50	79
60.96-62.48	6907	277	2.7	64	12	536	58	63
62.48-64.31	6908	53	6.1	318	6	656	48	111
64.31-65.84	6909	51	5.8	200	6	551	47	83
65.84-67.06	6910	73	6.4	275	8	387	44	84
68.88-70.41	6911	61	3.0	145	19	469	42	85
70.41-71.93	6912	55	4.3	146	12	788	71	106

Company: Nathan Minerals Inc.  
 Drillhole: 89-8  
 Azimuth: 210°  
 Inclination: -70° at collar  
 Length: 82.91 m  
 Core recovered: 5-40% estimated  
 Core size: NQ  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: east of Frying Pan Lake  
 claim EL 37  
 Coordinates: Gopher Grid: 0660N, 4000W  
 Elevation: 1202 m (from 1:5000 topo map)  
 Drilled: 1989 11 05 to 08  
 Drilled by Kluane Drilling Ltd.  
 Logged and sampled by T. Yawnghwe

Purpose: To test a GENIE anomaly at 0625N with a strike length of some 200 m

Note: Analyses of core and sludge samples are tabulated at the end of this log.

Metrage	Interval	Description
0- 37.19	37.19	<u>Overburden</u> , boulder till, silt and gravel
37.19- 43.89	6.70	<u>Graphitic and Acidic Tuffs</u> , interbedded black graphite bands and light-grey siliceous acidic tuff, minor chloritic andesite, bedding and banding at 75°-80°CA, 1-3% pyrite in veins and disseminations
43.89- 47.55	3.66	<u>Graphite Zone</u> , massively bedded(?), contacts and bedding obliterated, crumpled and broken
47.55- 48.62	1.07	<u>Graphitic and Acidic Tuffs</u> , interbedded as 37.19-43.89 m
48.62- 53.49	4.87	<u>Andesite</u> , green, tuffaceous, gabbroic(?) in part 48.92-49.23, 49.53-49.83, 50.44-50.60, 51.21-51.82, 52.43-53.49 m black graphitic interbeds at 85°-90°CA
53.49- 56.39	2.90	<u>Gabbro</u> , green, massive, fine- to medium-grained, sill(?), minor calcite veins
56.39- 60.05	3.66	<u>Latite(?) Porphyry</u> , light-grey, fine-grained to aphanitic, whitish plagioclase(?) phenocrysts 1-3 mm in size
60.05 64.47	4.42	<u>Gabbro</u> , green, massive 61.87-62.48 m brecciated with some quartz veins, contact at 45°CA
64.47- 69.80	5.33	<u>Graphitic Zone</u> , black, carbonaceous, sheared and crushed, contacts obliterated, some quartz veins
69.80- 71.63	1.83	<u>Calcareous Graphite</u> , black to coal-grey, marly, fine calcite veins at 80°CA
71.63- 82.91	11.28	<u>Gabbro</u> , green, medium- to fine-grained, generally massive
82.91	-	End of hole

SAMPLES AND ANALYSES FROM DRILLHOLE 89-8

A23

Interval (m)	Sample	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	Ni (ppm)
<u>Core</u>								
37.19-39.01	7835	260	1.1	28	7	61	7	27
39.01-40.23	7836	203	1.2	36	6	108	5	74
40.23-41.76	7837	104	1.9	46	8	80	10	50
41.76-43.28	7838	33	0.9	98	7	85	4	50
43.28-43.89	7839	21	0.3	70	1	88	7	131
43.89-44.81	7840	131	0.5	95	4	156	13	152
44.81-46.33	7841	31	0.4	77	6	221	6	65
68.58-69.49	7842	42	3.0	50	3	325	61	59
70.10-71.63	7843	48	1.5	53	1	307	38	43
<u>Sludge</u>								
27.74-28.65	7844	33	0.1	24	<1	43	3	41
28.65-29.57	7845	<10	<0.1	48	8	50	5	43
30.78-31.70	7846	26	<0.1	89	6	86	5	58
31.70-32.61	7847	43	0.3	194	15	143	11	96
32.61-33.53	7848	39	0.1	57	<1	52	8	44
33.53-34.44	7849	47	0.3	82	3	67	10	57
34.44-35.36	7850	161	0.1	61	1	56	7	47
35.36-36.27	7851	28	0.2	47	<1	68	7	53
36.27-37.19	7852	38	0.2	37	2	68	5	30
37.19-38.10	7853	43	0.1	56	2	66	6	39
38.10-39.01	7854	85	0.3	43	1	103	9	65
39.01-39.93	7855	57	0.3	86	15	92	10	67
39.93-40.84	7856	28	0.4	68	9	101	18	83
40.84-41.76	7857	35	0.9	56	9	93	9	58
41.76-43.28	7858	48	0.5	69	12	78	10	49
43.28-44.20	7859	50	<0.1	87	12	102	8	89
44.20-45.11	7860	30	0.4	94	8	116	7	74
45.11-46.33	7861	12	0.6	90	11	111	10	76
46.33-47.85	7862	23	0.8	91	10	135	9	48
47.85-49.38	7863	24	<0.1	78	10	84	10	67
50.90-52.43	7864	<10	0.2	95	10	116	14	89
52.43-53.95	7865	15	0.5	93	14	144	15	66
53.95-55.47	7866	<10	0.2	91	11	84	10	89
55.47-57.00	7867	20	0.1	87	13	92	12	49
57.00-58.52	7868	23	0.3	74	8	94	7	63
58.52-60.05	7869	33	0.1	75	11	91	8	49
60.05-61.57	7869b	10	<0.1	90	9	61	3	180
61.57-63.09	7870	<10	<0.1	90	9	79	9	92
63.09-64.62	7871	59	0.1	156	9	138	20	72
64.62-65.53	7872	<10	1.0	137	12	233	32	63
65.53-66.44	7873b	28	1.0	132	16	248	42	57
66.44-67.67	7873	<10	1.9	135	15	333	65	64
67.67-69.19	7874	19	3.2	116	14	415	57	71
69.19-70.71	7875	244	3.2	103	15	443	55	72
70.71-72.24	7876	45	2.3	77	8	236	31	53
72.24-73.76	7877	34	2.5	87	12	324	31	60
73.76-75.29	7878	26	2.7	121	14	349	38	65
75.29-76.81	7879	38	3.9	193	27	548	58	123
76.81-78.33	7880	69	1.3	106	9	198	21	55
78.33-79.86	7881	29	1.2	115	5	191	23	78

Company: Nathan Minerals Inc.  
 Drillhole: 89-9  
 Azimuth: n/a  
 Inclination: -90 at collar  
 Length: 72.54 m  
 Core recovered: n/a  
 Core size: n/a  
 Downhole logs: none run

Property: Burwash Creek, Yukon  
 Location: Burwash Uplands near Lake One;  
 claim SUE 2  
 Coordinates: 760S along Sue Trench, 42 m E of  
 claim location line  
 Elevation: 1350 m (from 1:5000 topo map)  
 Drilled: 1989 11 16 to 23  
 Drilled by Kluane Drilling Ltd.  
 Logged by T. Yawnghwe

Purpose: To test the anomalous concentrations of platinum obtained in the percussion drilling along the Sue Trench in 1987.

Note: Drillhole 89-9 was abandoned at 72.54 m because of caving and sloughing overburden which prevented attempting to drill deeper. No samples from this hole were collected.

Metrage	Interval	Description
0- 72.54	72.54	<u>Overburden</u> , boulder till
72.54	-	End of hole

## APPENDIX 2:

## LIST OF MINERAL CLAIMS

<u>Claim</u>	<u>Grant Number</u>
E1 1-9	YA 23529-36, YA 73861
E1 11-28	YA 75205-22
E1 29-84	YA 75409-56, YA 81412-19
Jo 1-10	YA 23537-44, YA 75189-90
Sue 1-11	YA 23545-52, YA 59001-02, YA 75195
Kat 1-46	YA 23553-60, YA 51141-56, YA 75167-88
Nan 1-8	YA 23561-68
Jan 1-8	YA 23569-76
Jan 19-30	YA 75233-44
Jan 43-56	YA 75257-62, YA 75385-88, YA 78505-08
Jan 59-72	YA 75389-96, YA 78509-10, YA 75397-400
Jan 77-80	YA 75405-08
Den 1-10	YA 23577-84, YA 75193-94
Wen 1-10	YA 23585-92, YA 75191-92
And 1-12	YA 23593-600, YA 52595-98
Jy 1-28	YA 23601-08, YA 51125-40, YA 52563-66
Jy 29-36	YA 93853-54, YA 52569-72, YA 93857-58
Jy 37-52	YA 52575-78, YA 93861-62, YA 52581-90
Jy 53-70	YA 93855-56, YA 93859-60, YA 75153-66

Nathan Minerals Inc. is the recorded holder of the claims listed above.

JJ 1-132, 137-148

EL 10, 85-110

JAN 81-146

NAN 9-16

SUE 12-16

AND 13-17

JAQ 11-42

DUK 1-8

Laurence B. Halferdahl is expected to to the recorded holder of the claims listed above, pending their transfer to Nathan Minerals Inc.

APPENDIX 3: FIELD AND OFFICE PERSONNEL INVOLVED  
IN THE WORK REPORTED HERE

Field

Bea Enterprises Box 567 Golden, B.C. VOA 1H0	bulldozer contractor	422½ h from 1989 07 05 to 1989 11 29
Owen Brown Box 567 Golden, B.C. VOA 1H0	bulldozer operator and camp foreman	1989 07 05 to 1989 11 29 with a total of about 15 days away
Gary Demeriez 15414 - 81 Avenue Edmonton, Alberta T5R 3P1	assistant	1989 10 08 to 1989 11 27
Hank Foster Teslin, Yukon	bulldozer operator	1989 08 05 and 07
L.B. Halferdahl 11539 - 73 Avenue Edmonton, Alberta T6G 0E2	engineer	1989 07 26 to 1989 08 03 1989 08 24 to 1989 09 04 1989 10 08 to 1989 10 15 1989 11 20 to 1989 11 27
Sam Johnson Jr. Burwash Landing	hoe and loader contractor	67 h backhoe and 28½ h labor between 1989 07 16 and 1989 08 19
Kluane Drilling Ltd. 14 MacDonald Road Whitehorse, Yukon	drilling contractor	1989 10 11 to 1989 11 09 1989 11 15 to 27
Northern Analytical Laboratories Ltd. 105 Copper Road Whitehorse, Yukon Y1A 2Z7	analytical services	1989 10 to 12
Jean White Box 4550 Whitehorse, Yukon Y1A 4R8	cook	1989 07 05 to 1989 11 29
Tiger Yawnghwe 5409 - 109 Street Edmonton, Alberta T5A 4E9	geologist	1989 10 10 to 1989 11 27
Tic Exploration Box 5060 Whitehorse, Yukon Y1A 4S3	bulldozer contractor	49 h on 1989 11 09, 16, 17, 23, 27
<u>Office</u>		
L.B. Halferdahl 11539 - 73 Avenue Edmonton, Alberta T5G 0E2	engineer	4 days in February 1990
W. McGuire 5307 - 145 Avenue Edmonton, Alberta T5A 4E9	draftsman	5½ days in November and December 1989
T. Yawnghwe 5409 - 109 Street Edmonton, Alberta T5A 4E9	geologist	7 days in December 1989