

PERCUSSION DRILLING REPORT

on the

**Happy Days
MINERAL CLAIM**

LOG NO: 12-19	RD.
ACTION:	
FILE NO:	

**KAMLOOPS MINING DIVISION
NTS 92I/10E**

Latitude: 50° 39' N

Longitude 120° 41' W

for

**TECK CORPORATION
1199 West Hastings Street
Vancouver, BC
V6E 2K5**

Report By

**Lorne A. Bond
Louis H. C. Tsang**

Kamloops, BC

December 5, 1990

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

20,649

T A B L E O F C O N T E N T S

	Page
1. Introduction	1
2. Property Description	3
3. Previous Work	3
4. Current Program	5
5. Drilling Results	6
6. Conclusions and Recommendations	7
7. Statement of Costs	9
8. Statement of Qualifications	10
Appendix I - Logs of Drill Cuttings and Assays.	

LIST OF FIGURES

Figure 1	Location Map	2
Figure 2	1990 Percussion Drill Hole Location Map (in pocket)	

1. Introduction

The Happy Days Claim Group is located on the south side of Greenstone Mountain some 27 kilometres southwest of Kamloops. Access is from the Trans-Canada Highway west of Kamloops at Cherry Creek, then along good gravel roads to the Dominic Lake area (Fig 1.).

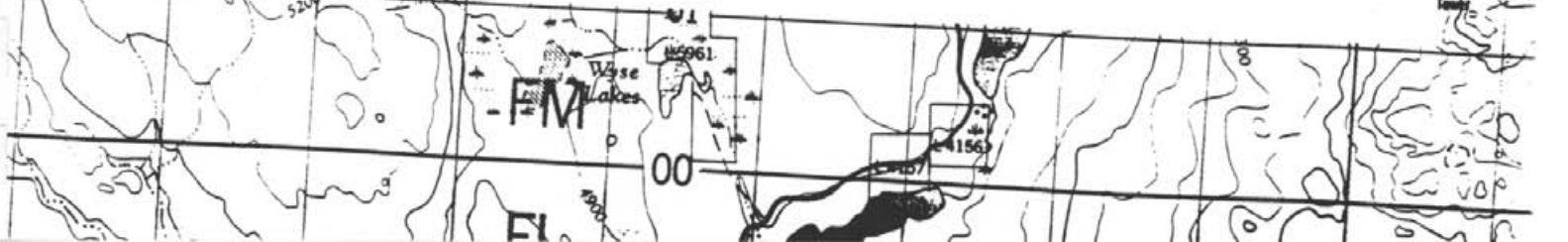
The claims are located at elevations between 1,350 and 1,650 meters. Upland pine forests cover an area of moderate relief containing a number of small lakes. Glacially derived overburden reaches depths of 30 m but some outcrop is present. Ice direction was from the northwest. Extensive clear-cut logging has made large areas of the property quite accessible.

A drilling program consisting of three percussion drill holes was carried out to test the copper and molybdenum geochemical anomaly on the Dominic Lake grid during the period between October 18, 1990, and October 23, 1990.



FIG. 1
LOCATION MAP
GS - RAG - HAPPY DAYS MINERAL CLAIMS
SCALE 1:50 000 NTS 92 I/10E

Chaparral Mountain
NTS 92 I/10E



2. Property Description

The Happy Days Claim Group consists of the following claims:

<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
Happy Days	20	169	Dec. 30, 1994*
Happy Days 4	18	1334	Aug. 8, 1995

* Upon approval of assessment work described in this report. The Statement of Work was submitted together with this report.

The claims are owned by Teck Corporation (70%) and Cominco Ltd. (30%) in a joint venture agreement with Teck as operator. The Happy Days and Happy Days 4 claims are subject to a production royalty agreement with Antelope Resources.

3. Previous Work

The area has been explored periodically since 1960 when Kennco conducted an exploration program on their DRG claims (Ass. Rpt. #325). Subsequent programs are described in the following reports:

Assessment Report No.	1009	Dominic Mining Co., 1967
"	1099	Noranda 1967
"	2511	Cominco 1970
"	3713, 4004	Mid-North Exploration 1972
"	5673	Cominco 1975
"	7337	Cominco 1979
"	8238	Cominco 1980
"	8580	Cominco 1980
"	17550	Teck Corp. 1988
"	17669	Cominco 1988

The Kennco survey (1960) outlined a broad area of anomalous molybdenum mineralization in the vicinity of the Roper Lake Stock, a calc-alkaline granitic pluton. A weaker pattern of copper and molybdenum values in soil extends to the north and northwest of the Roper Lake area in the direction of the alkalic Durand Lake Stock. The sporadic anomalous values are associated with a small plug of feldspar porphyry and fine to medium-grained diorites intruding overlying Nicola Volcanics. Subsequent work by Cominco has outlined a large low-grade molybdenite deposit centered on the Roper Lake Stock.

Induced polarization surveys conducted by Cominco personnel in 1980 (Ass. Rpt. 8580) outlined small weakly anomalous areas to the east of the Roper Lake Stock and north of Cornwall Lake. Further geological and geochemical surveys were recommended for this area.

In 1989 Teck Corporation entered into a joint venture agreement with Cominco Ltd. covering Teck and Cominco owned mineral claims in the Greenstone Mountain area. During the spring and summer of 1990, Teck conducted soil sampling, magnetometer and VLF-EM surveys over previously untested portions of the Rag and Happy Days claims (described in Geochemical and Geophysical Report, October 15, 1990).

4. Current Program

The drilling program was designed to further test the copper and molybdenum anomalous area on the Dominic Lake grid of the Happy Days claim. Three percussion drill holes were drilled on the more promising geochemistry sites of the northwest trending anomaly.

The holes were sited in clearcut areas. However, some access road and drillsite preparation were required to allow utilization of the truck mounted percussion drill and service vehicles. A D-6 bulldozer and operator were contracted from Pineview Ranch for this work.

H. Horning Percussion Drilling was retained for the program and 3 vertical percussion holes for a total of 155.5m (510 feet) were completed between October 18 and October 23, 1990. Samples were collected for each 10 foot (3.05m) advance and sent to the Afton Operating Corporation analytical lab for assaying. The samples were dried and broken down. Sample volume was reduced to 250 grams using a Jones riffle. This smaller sample was then pulverized. Reject material from the splitter was bagged, labelled and stored.

Assays for copper and MoS_2 were performed by dissolution followed by atomic absorption spectrophotometry analysis. Gold assays were performed by fire assaying with atomic

absorption analysis of the resultant bead in a methyl isobutyl ketone medium.

Three percussion drill holes (PDH 6, 7 and 9) were laid out to test the anomalous Cu and MoS₂ in soil between 3E and 4.3E and from 4.1N to 6.3N of Dominic Lake grid.

Percussion drill hole PDH 6 was completed to the designed depth of 91.4 meters while PDH-7 was drilled to a depth of 48.5 meters due to poor ground conditions. The third hole, PDH 9, was stopped at 15.2 meters.

5. Drilling Results

Detailed logs of drill cuttings and certificates of assay for each sample interval are included in the appendix. The following are summary descriptions of rock type, alteration, and mineralization for each hole.

P 90-6 (3E 6.3N)

0 m - 3.0 m Overburden

3.0 m - 91.5 m Magnetite-rich diorite with variation in grain size, ranging from fine to coarse grained and with 1% - 6% mafics and minor amount of K-spar.

Propylitic alteration is weak with significant carbonates but minor epidote and chlorite.

Pyrite is high and with an estimated average of 3%.

Trace of chalcopyrite can be found in most parts of the hole.

P 90-7 (3.6E 4.1N)

0 m - 3.0 m Overburden

3.0 m - 48.5 m Diorite as described in P90-6. Magnetite is relatively low for this hole. Propylitic alteration is moderate with abundant chlorites between 9.1 m - 21.3 m and significant epidotes 3.0 m - 9.1 m and 27.3 m - 48.5 m.

Clay minerals increases with depth and with relatively high content below 21.2 m.

Pyrite is persistently high with an estimated average of 3.5%.

Muscovite and/or biotite are present only to a depth of 30.3 m.

The molybdenite values of the hole ranges from .004% to .026% MoS₂ with an average of 0.012% MoS₂.

P 90-9 (4.3E 4.25N)

0 m - 8.2 m Overburden

8.2 m - 15.2 m Diorite as described in P 90-6.

Weak propylitic alteration with an estimated average of pyrite about 1%.

The average of molybdenite values for two samples is 0.013% MoS₂.

6. Conclusions and Recommendations

All three percussion drill holes intersect magnetite-rich diorite of a probable southward extension of the composite diorite-monzonite Durand Lake Stock. Pyrite content in rock

ranges between 1% to 3.5% high. Drill holes P 90-7 (48.5 meters deep) and P 90-9 (15.2 meters deep) returned assays with averages of MoS₂ between .012% to .013% MoS₂. However, no elevated gold or copper values were detected among these drill holes. A short trenching and geological mapping program in the clearcut areas could be a means of further delineation of the copper-molybdenum anomalous areas. This would lead, as well, to a better definition of the geology between the Durand Lake intrusive and the molybdenite-hosting Roper Lake Stock to the southeast.

7. Statement of Costs

Percussion Drilling (October 18 - 23, 1990)

H. N. Horning Percussion Drilling Ltd.	
154.5 meters (510 feet) @ 6.50 per foot	\$3,315.00
Drilling supplies (grout, mud, etc.)	<u>65.00</u>
Subtotal	\$3,380.00

Assaying Percussion Drill Samples

46 samples for Cu, Au, MoS ₂ @ 21.00 each	\$ 966.00
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Site Preparation (Pineview Ranch)

D6 Bulldozer Rental @ \$91.25/hour	
for 5 hours	\$ 456.25
Operator Travel Time (2.5 hours) @ \$31.00/hour	<u>77.50</u>
Subtotal	\$ 533.75

Geological Personnel (L. Bond)

Planning and Supervision	
6 days @ \$255	\$1,530.00

Report preparation, drafting, and cuttings logging	\$ 765.00
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TOTAL	\$7,174.75
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Withdrawn from Teck Corporation PAC Account	<u>825.25</u>
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Total amount applied to claims	<u>\$8,000.00</u>
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8. Statement of Qualifications

I, Lorne Allan Bond, of the City of Kamloops, British Columbia, do hereby certify that:

1. I am a qualified, practising Geologist.
2. I am a graduate of Loyola College (University of Montreal), with a B.Sc. (1967) in Geotechnical Sciences.
3. I have practised my profession since 1967 while employed with Sherritt-Gordon Mines Ltd., Cominco Ltd., and Afton Operating Corporation.
4. This report described a percussion drilling program performed under my supervision during the period October 18 to October 23, 1990.

Lorne A. Bond
Senior Geologist
Afton Operating Corporation
December 5, 1990

8. Statement of Qualifications

I, Louis Hee-Choi Tsang, of the City of Kamloops, British Columbia, do hereby certify that:

1. I am a qualified, practising geologist.
2. I am a graduate of the University of British Columbia with a B.Sc. (1972) in Geology and Geophysics.
3. I have practised my profession since 1972 while employed with Granisle Copper Ltd., Highmont Operating Corporation and Afton Operating Corporation.
4. I have logged the drill cuttings of percussion holes that were drilled on the Happy Days claim group during October 1990 and assisted in report preparation.

Louis H. C. Tsang
Exploration Geologist
Afton Operating Corporation
December 5, 1990

APPENDIX I

Logs of Drill Cuttings and Assays

LEGEND FOR LOGS OF DRILL CUTTINGS.

Symbols / Abbreviation	Description
* *	abundant
o	significant
✓	present in small amount
KF	K-spars
PC	Plagioclase
QU	quartz
BI	biotite
HO	Pyroxene / amphibole
MU	muscovite
PY	pyrite
CY	clay minerals
CH	Chlorites
EP	Epidote
CB	Carbonates
Intensity of A+	Degree of alteration [L light M medium I intense
CP	Chalcopyrite
MO	Molybdenum
BN	Bornite
CC	Chalcocite
HE	Hematite
MG	Magnetite
LM	Limonite.

PDH 90-#7

Nov 2/1990

Logged by L. TSANG

BOREHOLE CUTTING LOG

Hole No.	Essential Minerals			Secondary minerals									Intensity of Δ	Rock Type	Mineralization							Assay		Remarks/Date
	Feldspar KF: PC	QU	Mafic BI: HO	QU	KF	BI	MU	PY	CY	CH	EP	CB			CP	MO	BN	CC	PY	HE	MG	LM	Mo	
0-10																							OVERBURDEN	
10-20	*		6%				4%	✓	0	0	0	L	DIOR						✓	0				
20-30	*		4%				✓ 2%	✓	✓	0	0	L	DIOR						✓	0				
30-40	*					✓	6%	0	*	✓	0	I	DIOR						✓	✓				
40-50	*		1%			✓	4%	0	*	✓	0	I	DIOR						✓	✓				
50-60	*		1%			✓	7%	0	*	✓	0	I	DIOR						✓	✓				
60-70	*						6%	*	*	✓	0	I	DIOR						✓	✓				
70-80	*						1 1/2%	*	✓	✓	*	I	DIOR							✓				
80-90	*					✓	1%	*	0	✓	*	I	DIOR						✓	✓				
90-100	*					✓	1%	*	✓	0	0	I	DIOR						✓	✓	✓			
100-110	*						1%	*	✓	0	0	I	DIOR						✓	✓				
110-120	*						3%	*	✓	0	0	I	DIOR						✓	✓				
120-130	*						4%	*	✓	0	0	I	DIOR	✓					✓	✓				
130-140	*						4%	*	✓	0	0	I	DIOR						✓	✓	✓			
140-150	✓*						5%	*	✓	0	0	I	DIOR						✓	✓				
150-160	*		4%				3%	*	✓	0	0	L	DIOR	✓					✓	✓				
17																								

L. Tsang

AFTON OPERATING CORPORATION

INTER-OFFICE LETTER

DATE: October 30, 1990

COPIES TO:

TO: Lorne Bond

FROM: Joe Mihalech

WHEN FEASIBLE, CONFINE LETTER
TO ONE SUBJECT

RE: Afton's Assays on Greenstone Drill Samples

<u>Hole</u>	<u>Depth Interval</u>	<u>Cu (%)</u>	<u>Au (opst)</u>	<u>MoS₂ (%)²</u>
PDH 90-6	10-20	.026	L.0005	.002
	20-30	.022	.0005	.002
	30-40	.046	.0007	.002
	40-50	.020	L.0005	.001
	50-60	.030	.0006	.001
	60-70	.031	.0005	.002
	70-80	.018	L.0005	.004
	80-90	.029	.0005	.003
	90-100	.031	L.0005	.003
	100-110	.035	.0005	.005
	110-120	.029	L.0005	.002
	120-130	.048	.0009	.001
	130-140	.035	.0005	.003
	140-150	.027	.0005	.003
	150-160	.023	.0005	.001
	160-170	.035	.0005	.001
	170-180	.027	.0006	.001
	180-190	.029	L.0006	.001
	190-200	.028	L.0006	.001
	200-210	.029	L.0006	.001
	210-220	.026	.0011	.001
	220-230	.039	.0016	.002
	230-240	.034	.0018	.001
	240-250	.032	.0012	.003
	250-260	.026	.0010	.005
	260-270	.021	.0009	.014

PDH 90-6 (cont'd.)

270-280	.019	.0011	.004
280-290	.031	.0015	.001
290-300	.054	.0028	.005

Joe Mihalech
Joe Mihalech,
Chief Assayer

JM/rd

AFTON OPERATING CORPORATION

INTER-OFFICE LETTER

DATE: October 31, 1990

COPIES TO:

TO: Lorne Bond


FROM: Joe Mihalech

WHEN FEASIBLE, CONFINE LETTER
TO ONE SUBJECT

RE:

Afton's Assays on Greenstone Drill Samples

<u>Hole</u>	<u>Depth Interval</u>	<u>Cu (%)</u>	<u>Au (opst)</u>	<u>MoS₂ (%)</u>
PDH 90-7	8-20	.026	.0008	.006
	20-30	.024	.0007	.010
	30-40	.020	.0005	.010
	40-50	.020	.0005	.007
	50-60	.025	L.0005	.025
	60-70	.021	L.0005	.009
	70-80	.008	L.0005	.004
	80-90	.011	L.0005	.005
	90-100	.010	L.0005	.009
	100-110	.019	L.0005	.012
	110-120	.018	L.0005	.018
	120-130	.019	L.0005	.026
	130-140	.019	L.0005	.018
	140-150	.019	.0005	.012
	150-160	.018	L.0005	.010



Joe Mihalech,
Chief Assayer

AFTON OPERATING CORPORATION

INTER-OFFICE LETTER

DATE: November 2, 1990

COPIES TO:

TO: Lorne Bond

FROM: Joe Mihalech

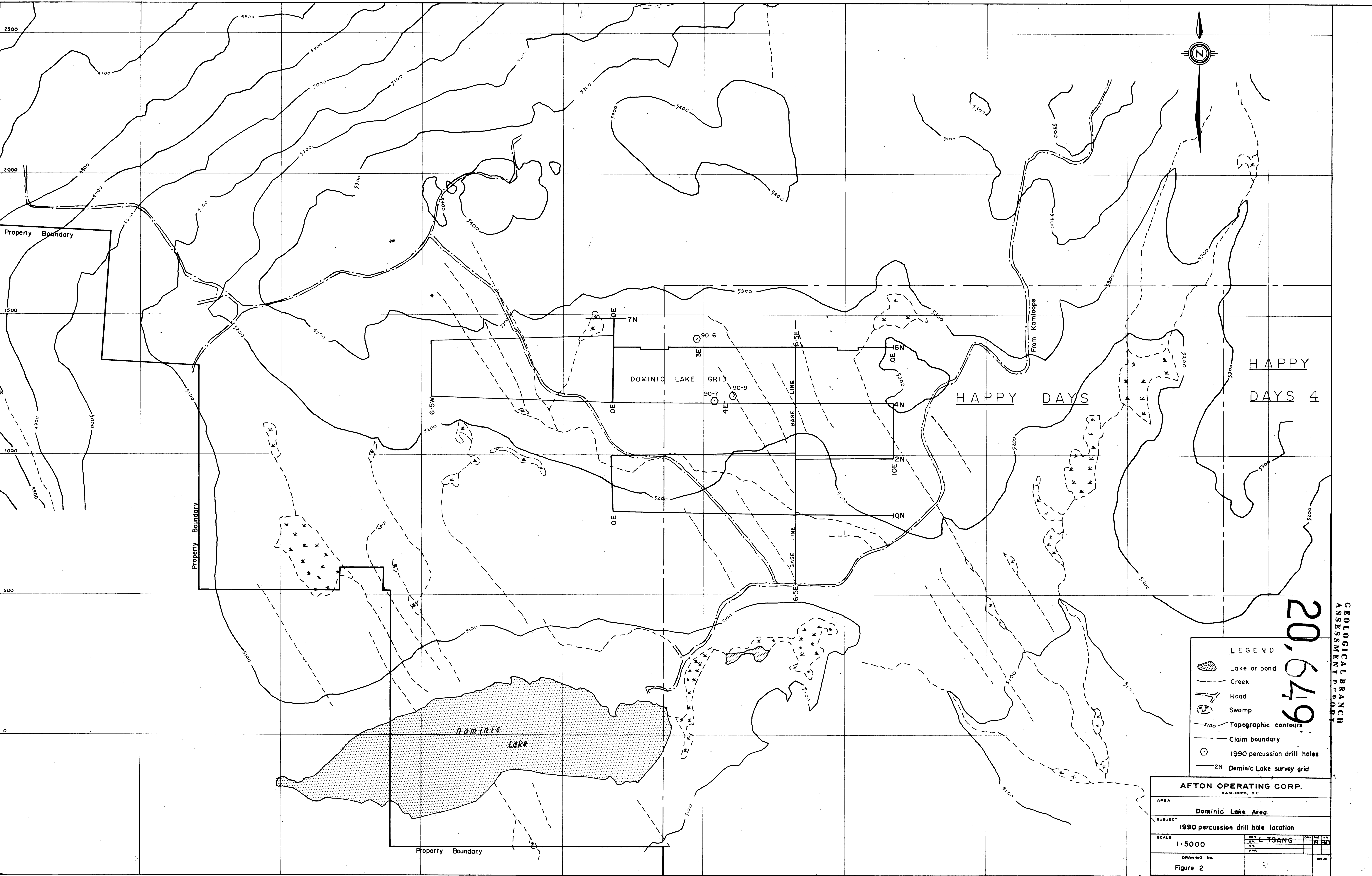
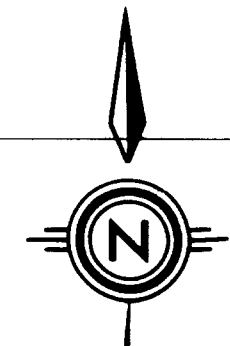
WHEN FEASIBLE, CONFINE LETTER
TO ONE SUBJECT

RE: **Afton's Assays on Greenstone Drill Samples**

<u>Hole</u>	<u>Depth Interval</u>	<u>Cu (%)</u>	<u>Au (opst)</u>	<u>MoS₂ (%)²</u>
PDH 9-90	27-40	.042	.0016	.015
	40-50	.041	.0008	.011
PDH 10-90	10-20	.012	.0034	.001
	20-30	.017	.0018	.001
	30-40	.016	.0081	.001
	40-50	.014	.0025	.001
	50-60	.027	.0038	.001
	60-70	.029	.0055	.001

Joe Mihalech
J. Mihalech,
Chief Assayer

JM/rd



HAPPY DAYS 4

LEGEND

- Lake or pond
- Creek
- Road
- Swamp
- 5100 Topographic contours
- Claim boundary
- 1990 percussion drill holes
- 2N Dominic Lake survey grid

20,649

GEOLOGICAL BRANCH
ASSESSMENT REPORT

AFTON OPERATING CORP. KAMLOOPS, B.C.			
AREA	Dominic Lake Area		
SUBJECT	1990 percussion drill hole location		
SCALE	1:5000	DRN	DRY
		BY	BY
DRAWING No.		APP.	ISSUE
Figure 2			