

MAP NO.:
115F 15

ASSESSMENT REPORT X
PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 093101
MINING DISTRICT: WHITEHORSE
TYPE OF WORK: D DRILLING

REPORT FILED UNDER: NORANDA EXPLORATION

DATE PERFORMED: MAY 20 JUNE 6, 1993

DATE FILED: JULY 6, 1993

LOCATION: LAT.: 61°59'N

AREA: TCHAWSAHMON LAKE

LONG.: 140°52'W

VALUE \$: 14,400

CLAIM NAME & NO.: AZ 1-8 (YB26305-212), 9-72 (YB35932-994)?

WORK DONE BY: JESSE L. DUKE

WORK DONE FOR: NORANDA EXPLORATION CL

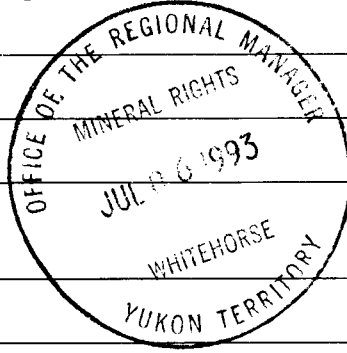
DATE TO GOOD STANDING:

REMARKS: DIAMOND DRILLING PROGRAM COMPLETED
FOUR HOLES TOTALLING 232 M DRILLED TO TEST SKARN MINERALIZATION



TRANSMITTAL FORM

M.R. file no.
R.M.M.R. file no.
Date forwarded 5 JULY '93



From Mining Recorder at: Whitehorse

To Regional Manager, Mineral Rights at Whitehorse, Y.T.

For action are:

NEW APPLICATION FOR PLACER LEASE TO PROSPECT

Name

RENEWAL APPLICATION PLACER LEASE TO PROSPECT

Name

Lease no.

AFFIDAVIT OF EXPENDITURE ON PLACER LEASE

Name

Lease no.

SECURITY DEPOSIT

FINANCIAL ABILITY

ASSIGNMENT OF PLACER LEASE NO.

From

To

GROUPING APPLICATION UNDER SEC. 52(2) PLACER MINING ACT.

Owner

DIAMOND DRILL LOGS

Claims

AZ 172

APPROVED - \$14,400.00

Claim sheet no.

115F-15

QUARTZ ASSESSMENT REPORT

Claims

Claim sheet no.

Type of report

Submitted by

Cls. work performed on

\$ req. for ren. application

H Southwick
Signature

Date returned

REPLY ACTION

<p>Signature</p>

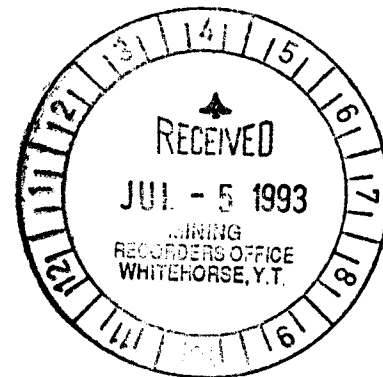
093101

**REPORT
ON THE AZ 1-72
QUARTZ CLAIMS**

WHITEHORSE MINING DISTRICT

N.T.S.: 115F/15

**LATITUDE: 61°59'
LONGITUDE: 140°52'**



093101

**OWNER: NORANDA EXPLORATION COMPANY, LIMITED
(No Personal Liability)**

**JESSE L. DUKE
JUNE, 1993**

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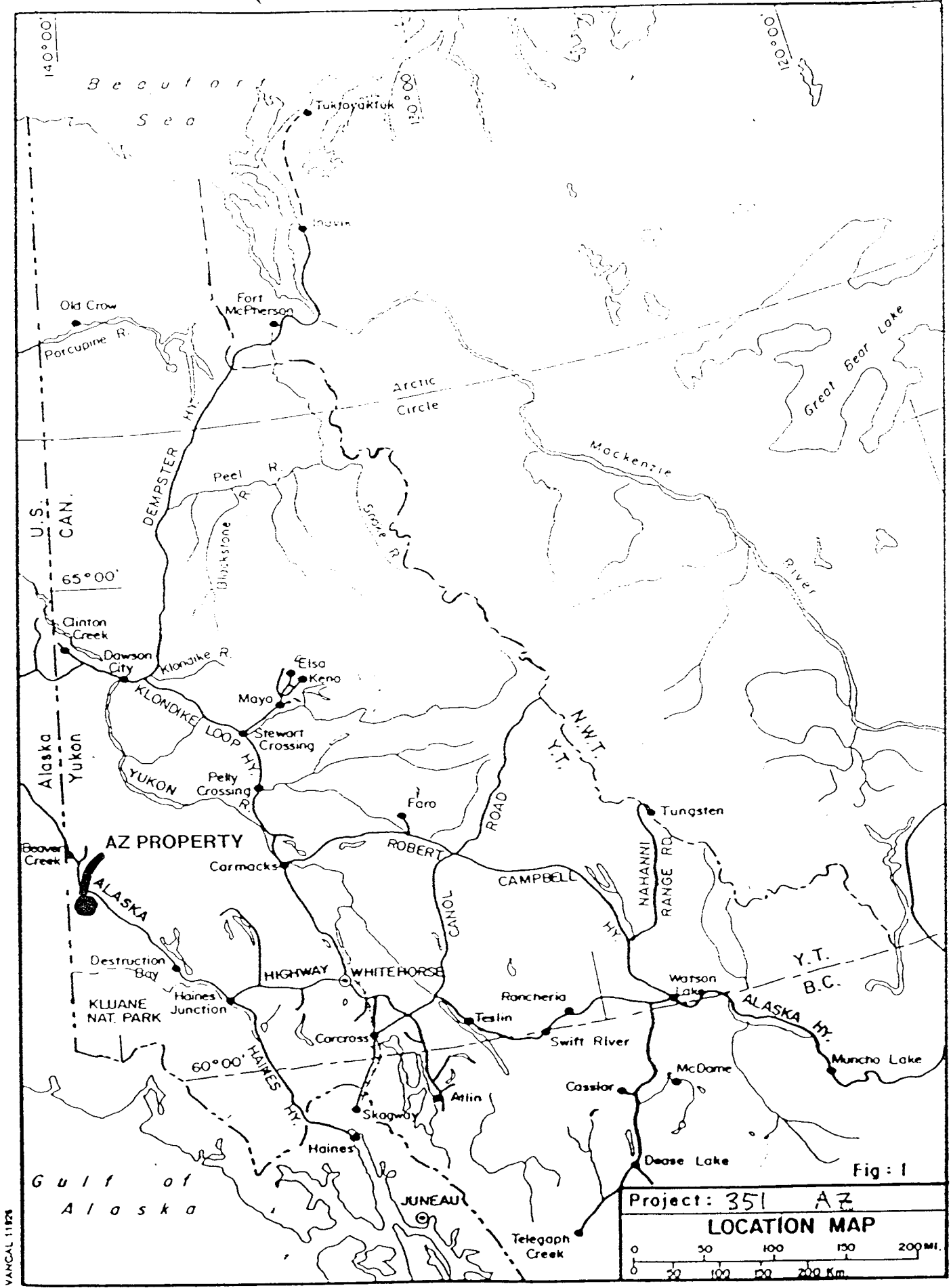
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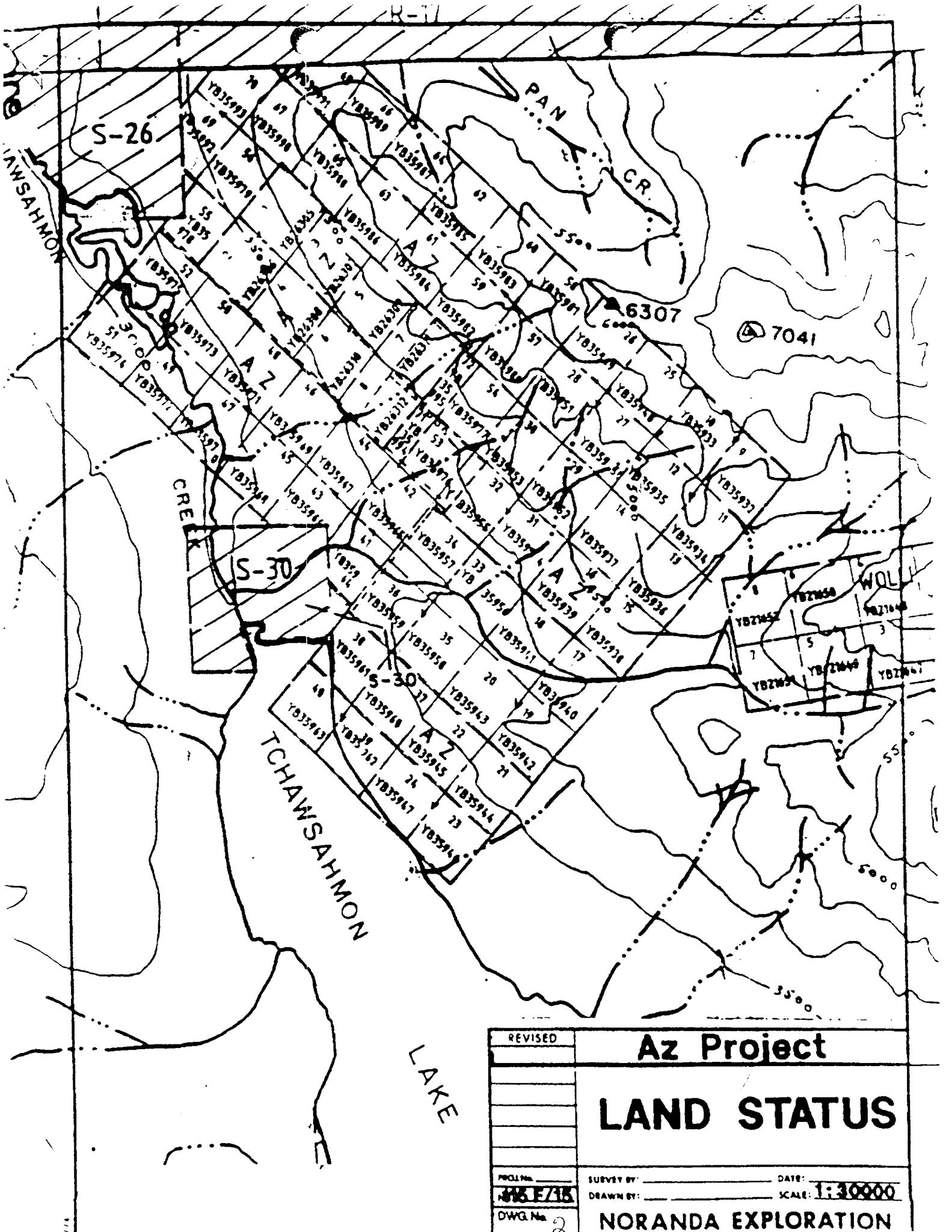
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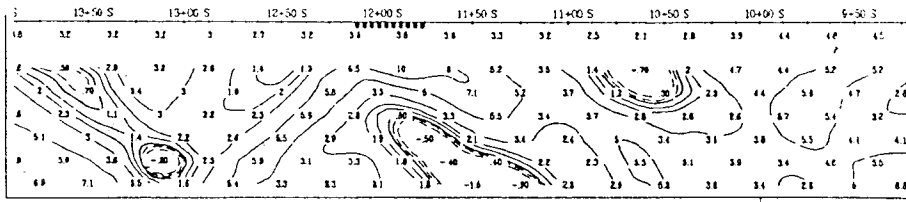
VAN CAL 11878

Project: 351 AZ
LOCATION MAP
 0 50 100 150 200 MI.
 0 50 100 150 200 Km.

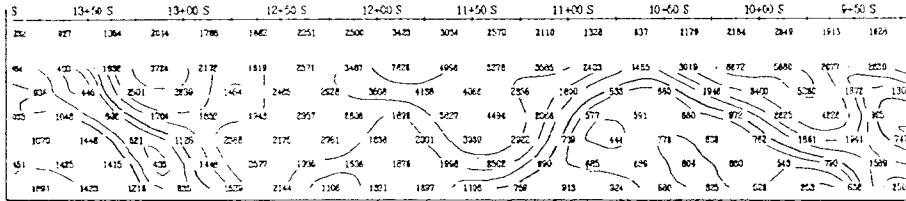
Fig: 1



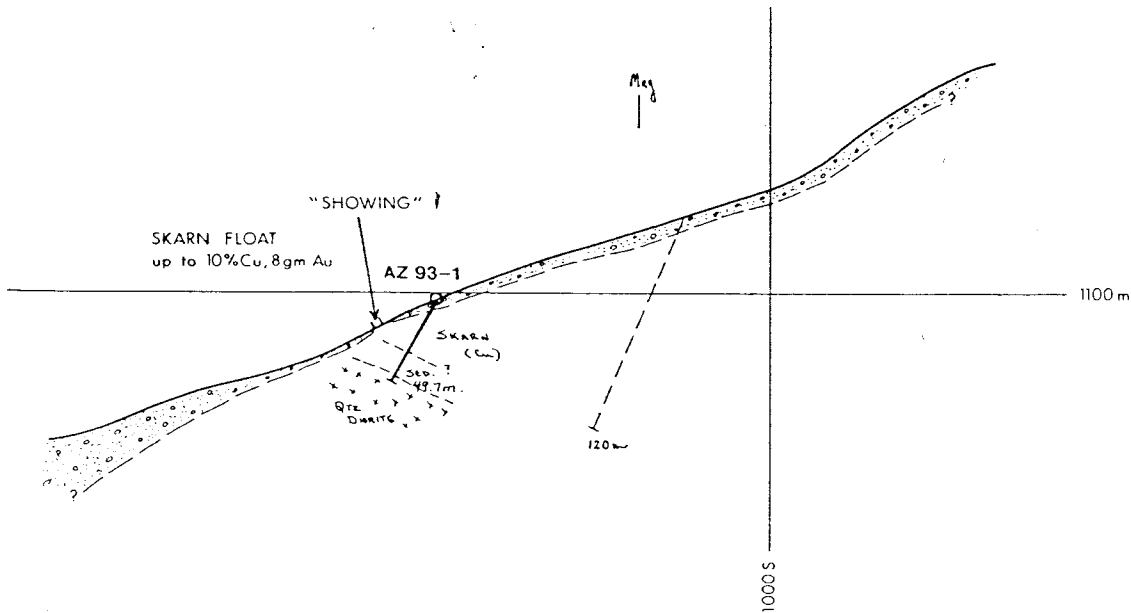
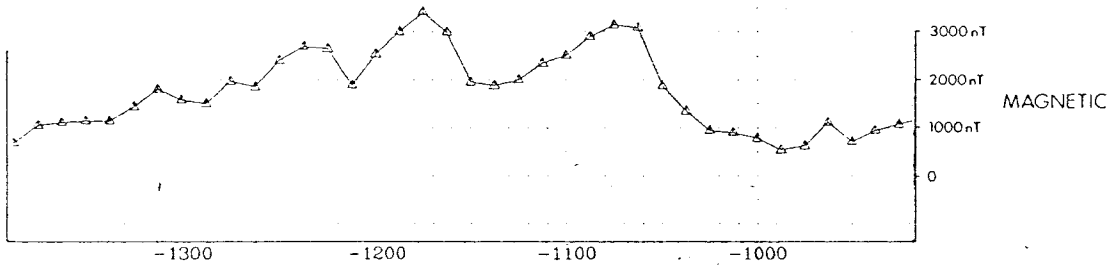
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	LAND STATUS	
ROLL No.	SURVEY BY:	DATE:
18 E/18	DRAWN BY:	SCALE: 1:30000
DWG. No. 2	NORANDA EXPLORATION	



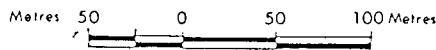
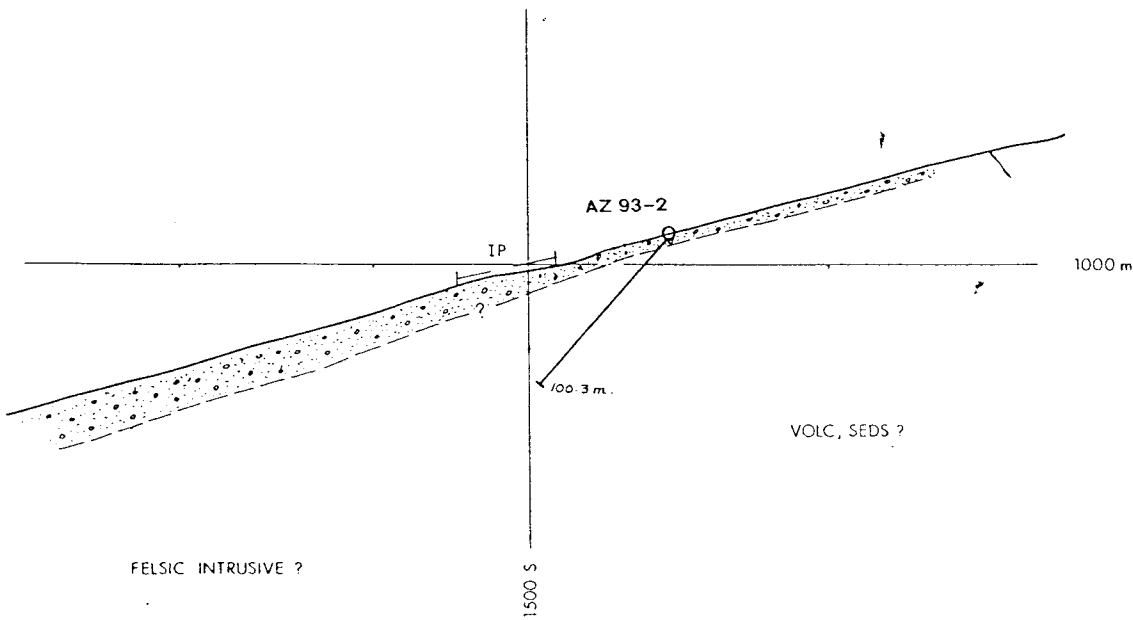
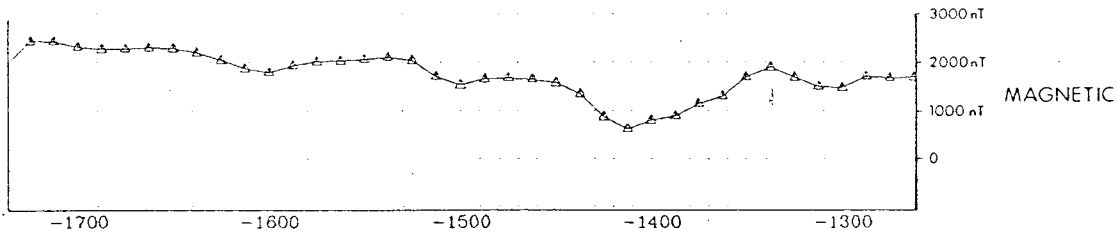
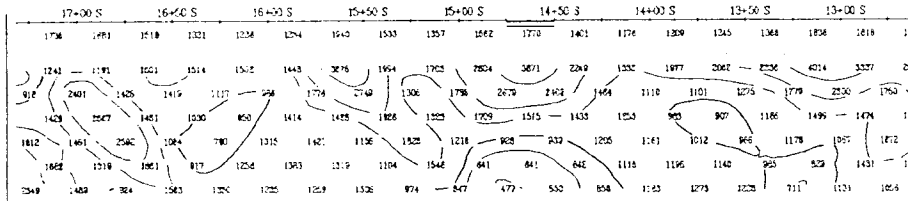
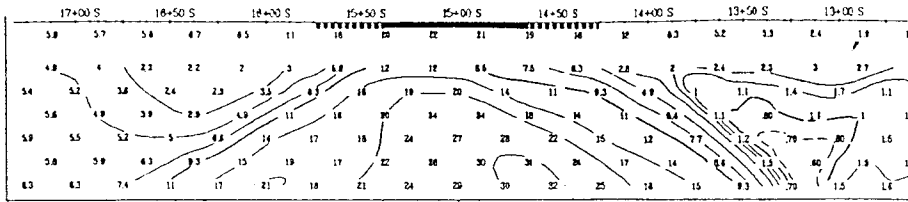
CHARGEABILITY
mV/V



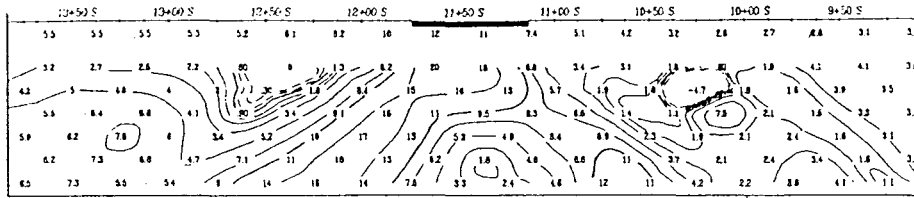
APPARENT
RESISTIVITY
(ohm-m)



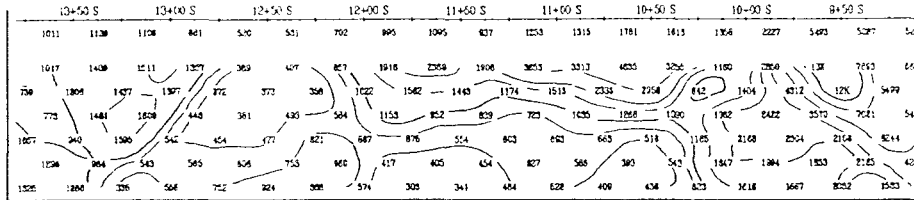
REVISED	AZ PROJECT	
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PROJ No	SURVEY BY	DATE
NTS	DRAWN BY	SCALE
DWG No	NORANDA EXPLORATION	
FIG.3	OFFICE	



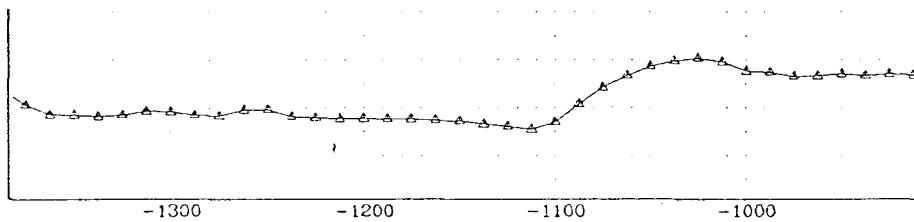
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PROJECT	SURVEY BY	DATE
NTS	DRAWN BY	SCALE
DWG. No.	NORANDA EXPLORATION	
FIG.4	OFFICE	



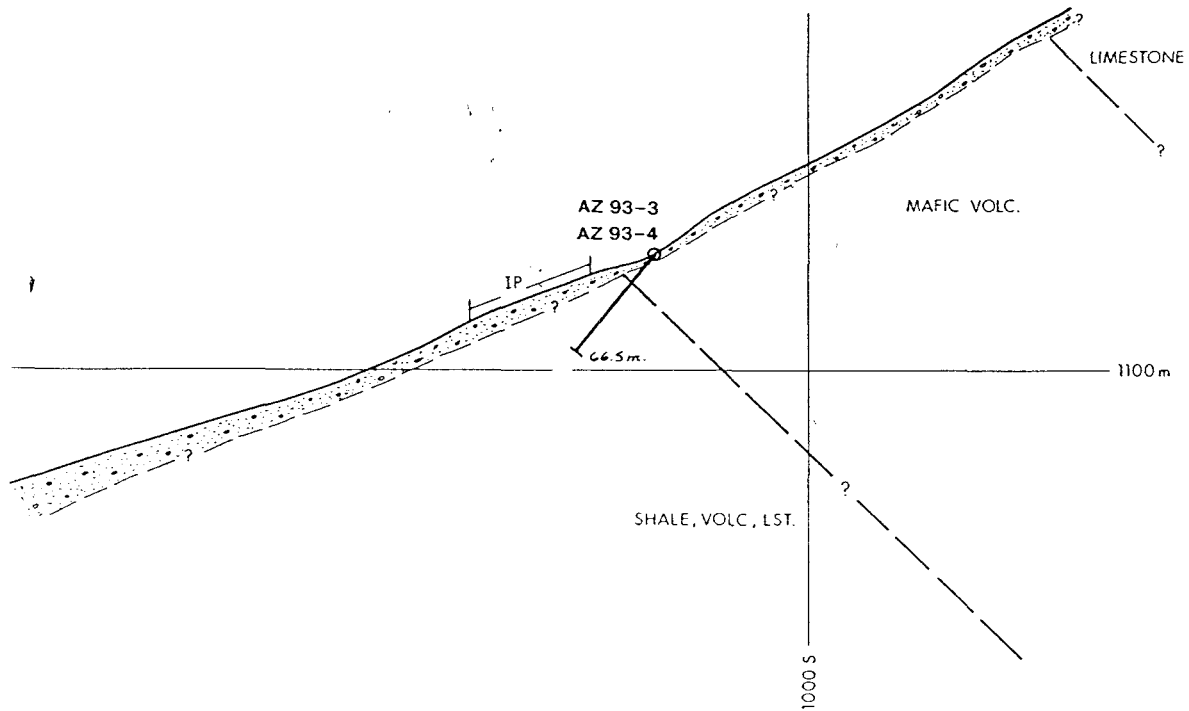
CHARGEABILITY
mV/V



APPARENT
RESISTIVITY
(ohm-m)



MAGNETIC



REVISED	AZ PROJECT	
	SECTION 12100E	
PROJ. No.	SURVEY BY: _____	DATE _____
N.T.S.	DRAWN BY: _____	SCALE _____
DWG. No.	NORANDA EXPLORATION	
FIG.5	OFFICE: _____	

SUMMARY

A total of 232 metres of diamond drilling was completed on the property in 1993. Three targets were tested seeking the source of auriferous chalcopyrite-bearing magnetite-epidote-garnet skarn that occurs as float on the property. Sampling of boulder float returned an average of 10% Cu, 126.5 g/t Ag and 7.08 g/t Au from four grab samples. Hole 93-1, under the float showing intersected 28.4 metres of skarn. The best intersection was 0.2% Cu and 187 ppb Au over 2 metres. A chargeability target tested in hole 2 can be explained by pyritic and clay altered andesite. Graphitic argillite underlies the target tested in holes three and four.

Anomalous copper gold-bearing skarn underneath the float showing suggests a local source for the mineralized float on the property. Additional drilling of the skarn around the showing would be required to locate the source. Further work should concentrate on the area updip of the skarns intersected in Hole 93-1.

WORK PROGRAM

Between May 20 and June 6 a Hydrocore 28 diamond drill was mobilized by helicopter to the property. A total of 232 metres of NQ drilling was completed in four holes.

Drilling was completed by Advanced Drilling Ltd. of Surrey, B.C. Air-support was provided by Fireweed Helicopters of Whitehorse. The White River Lodge at Mile 1169 on the Alaska Highway provided room and board for the crew. Jesse Duke supervised the field operation.

Drill core was logged and sampled at the drillsite. Core is stored in covered wooden boxes at each drillsite.

Selected samples were shipped to Northern Analytical Laboratories Ltd. in Whitehorse. Fire assays for gold and copper analysis by atomic absorption was completed. The assay certificate and drill logs listing sample numbers and results are in the Appendices.

RESULTS

Three targets were tested. Each is discussed separately below.

DDH AZ-93-1 (11,000E; 1170S) -60 @ 235° AZ.

Description: The average of four samples taken from angular boulders of auriferous chalcopyrite, magnetite, epidote garnet skarn was 10% Cu, 126.5 g/t Ag and 7.08 g/t Au. Trenching at the showing in 1991 exposed skarn with anomalous values of copper and gold at the showing. The skarn is hosted in an autoclastic basalt flow.

Program: The drill was collared uphill of the showing to test for a local source for the mineralization. The target area is marked by moderate chargeability and strong resistivity., The entire hole was split and sampled at 2 metre intervals.

Results: The drill intersected skarn from the surface to a depth of 32.6 m beneath the skarn, followed by 13.2 m of fine-grained hornfels. Fresh biotite quartz diorite occurs at 45.8 m. The hole was completed in diorite at 49.7 m. The best sample interval returned 0.19% Cu and 187 ppb Au between 18.0 and 20.0 metres.

The drilling supports a local source for mineralization at the showing. Significant copper-gold mineralization could be encountered where basalt is in contact with diorite. The hornfels intersected at the contact in this hole probably has a fine-grained clastic origin and not a suitable host for skarn development. Additional drilling upslope or along strike to the east may prove successful in locating the source of mineralization at the showing. The positive magnetic signature of the area around the showing reflects magnetite in the skarn. A positive visual correlation between magnetite and chalcopyrite in the core indicates magnetics should be an important tool in identifying additional targets on the property.

DDH AZ 93-2 (11202E; 1422S) -50° @ 235° AZ.

Description: This target is marked by coincident high chargeability, low resistivity and a high magnetic response. A gentle dip of the stratigraphy into the hillside is suggested by the I.P. pseudo-section.

Program: A 100.28 metre hole was completed under the target.

Results: No skarn mineralization was encountered. The rock consists of massive andesite flows. Some biotite-hornblende quartz diorite is mixed with the andesite in the first 21 metres. Below 80.5 metres a pronounced quartz-green clay stockwork occurs throughout this section. Pyritic andesite (0.5%) occurs vertically below an area of low resistivity. A combination of pyrite and clay in a steeply south dipping zone may be responsible for this chargeability - resistivity target.

Compositional banding on the core suggest a maximum dip of 40°.

DDH AZ 93-3, 4 (12020E, 1080S) (Hole 3 -50° grids, Hole 4 -65° @ 225° AZ)

Description: A zone of high chargeability on the southern flank of a magnetic high occurs 1100 m grid east from the showing in an "up-ice" direction.

Program: The drill was moved 80 m grid west as slopes over the target (-25°) prevented drill pad construction. Hole 3 was abandoned due to difficult ground conditions. Hole 4 was drilled from the same location at a steeper angle (-65°) and at a different azimuth in an attempt to find better ground conditions. Hole 4 was completed at 66.45 m.

Results: Graphitic argillite was intersected between 32.9 and 35.0 m. A 22° dip projected to surface would mark the uphill start of the chargeability target. Downslope dispersion of the graphitic horizon plus grey pyritic (possibly graphitic) limestone would account for the chargeability target.

CONCLUSIONS AND RECOMMENDATIONS

Drilling under the skarn showing defined extensive skarn development with anomalous gold and copper values hosted in mafic volcanic rock. Skarn is developed in carbonate-altered or auto-brecciated basalt flow. Hornfels occurs adjacent to the contact with diorite in drill hole 93-1. Significant copper-gold mineralization may occur in the area where basalt is in contact with diorite.

The two chargeability targets tested can be explained by pyritic - clay-rich andesite (hole 2) and graphitic argillite (holes 3 and 4).


Further work should concentrate in the area updip of the skarns intersected in 93-1.

A handwritten signature in black ink, appearing to read "James R. Dur". The signature is written in a cursive, somewhat stylized font with large loops and a long horizontal tail.

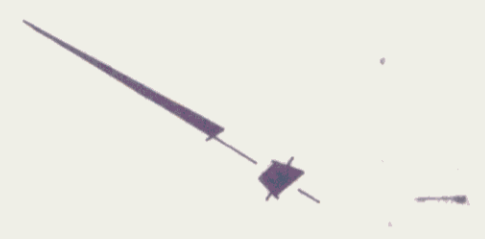
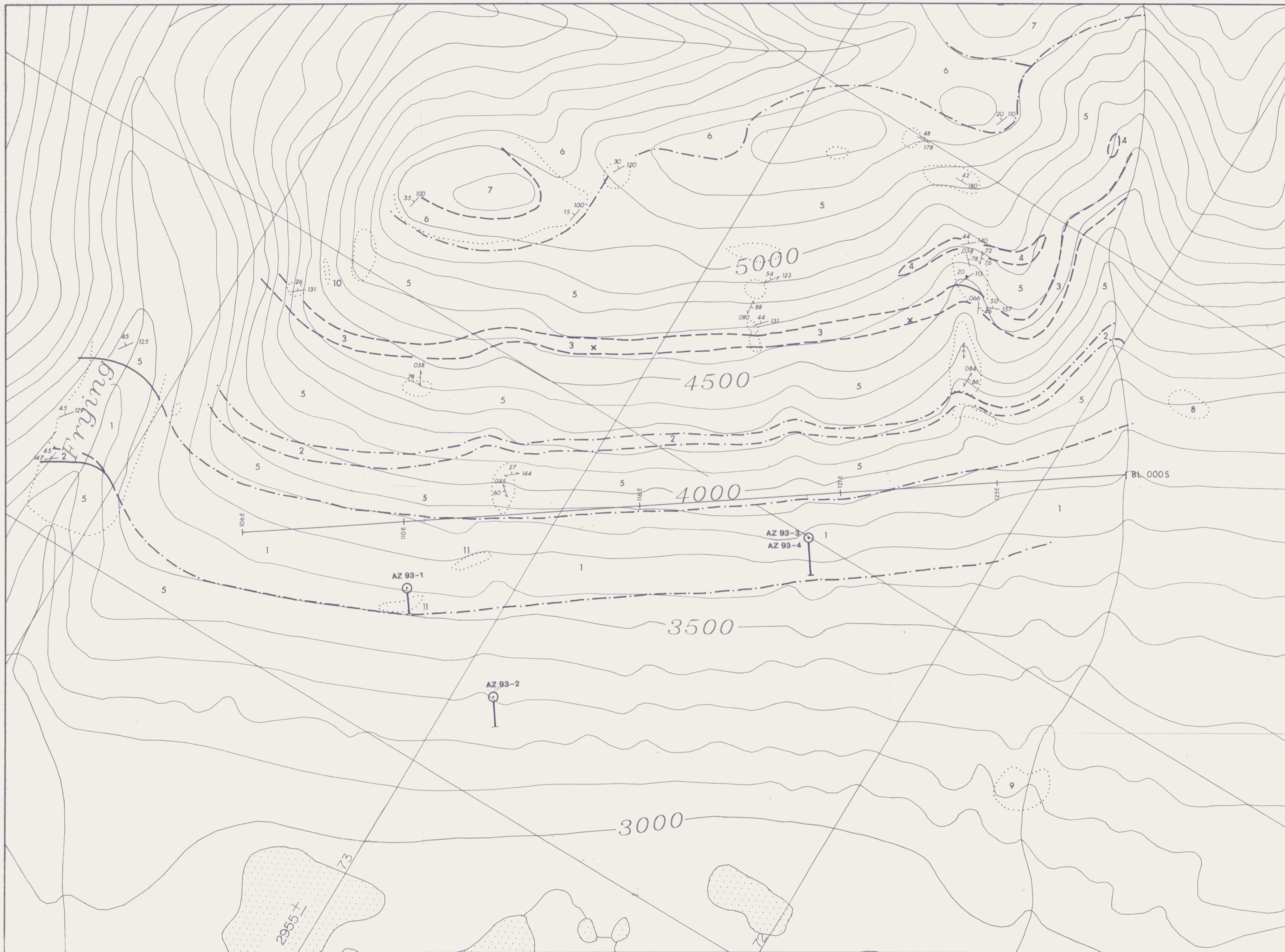
STATEMENT OF QUALIFICATIONS

I, Jesse L. Duke, of Whitehorse, Yukon Territory hereby certify that:

1. I am a Geologist residing in Whitehorse and have a Bachelors of Science degree obtained from the University of Alaska in 1986.
2. I have been employed by Noranda Exploration Company, Limited (No Personal Liability) since 1988.
3. I am a Fellow of the Geological Association of Canada.



Jesse L. Duke



LEGEND

- 11 MINERALIZED SKARN
- 10 FELDSPAR PORPHYRY DYKE
- 9 QUARTZ MONZONITE TO GRANODIORITE
- 8 HORNBLENDE DIORITE
- 7 MIXED GRITTY SEDIMENTS AND VOLCANICS
- 6 INTERBEDDED WHITE LIMESTONE
- 5 BASALT TO ANDESITE
- 4 UPPER LIMESTONE UNIT
- 3 MIDDLE LIMESTONE UNIT
- 2 LOWER LIMESTONE
- 1 INTERBEDDED SHALE, VOLCANICS AND LIMESTONE
- BEDDING
- FOLIATION
- CONTACT
- APPROX. CONTACT
- DDH

093101
DWG 165

SCALE
1:5000

Metres 100 0 100 200 300 Metres

REVISED	AZ PROPERTY	
	GEOLOGY	
PROJ.No. 0351	SURVEY BY: F. J. JALITOKA, J.S.	DATE: MAR 21/92
N.T.S. 1:25000	DRAWN BY: F. J. JALITOKA, J.S.	SCALE: 1:5000
DWG.No. FIG.6	NORANDA EXPLORATION	
	OFFICE: VANCOUVER	

APPENDIX I
STATEMENT OF COSTS

STATEMENT OF COSTS

Drilling Charges	\$15,700
Labour and Equipment	\$16,000
Materials	\$ 3,927
Mob/Demob	\$ 6,300
Helicopter Support (49.6 hours)	\$32,081
Room and Board	\$ 5,930
Fuel	\$ 404
Field Supervision:	
Geologist (16 days @ \$250/day)	\$ 4,000
Report Preparation	<u>\$ 500</u>
PROJECT TOTAL	\$84,902

APPENDIX II
ASSAY RESULTS

NORANDA DELTA LABORATORY

Geochemical Analysis

Project Name & No.: AZ - 351

Geol.: J.D.

Date received: JUNE. 14

LAB CODE: 9306-014

Material: 1 Rock

Sheet: 1 of 1

Date completed: JUNE. 16

Remarks: • Sample screened @ -35 MESH (0.5 mm)

□ Organic, Δ Humus, S Sulfide

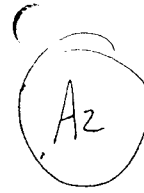
Au - 10.0 g sample digested with aqua-regia and determined by A.A. (D.L. 5 PPB)

ICP - 0.2 g sample digested with 3 ml HClO₄/HNO₃ (4:1) at 203 °C for 4 hours diluted to 10 ml with water. Leeman PS3000 ICP determined elemental contents.

N.B. The major oxide elements and Ba, Be, Ce, La, Li, Ga are rarely dissolved completely from geological materials with this acid dissolution method.

*Sb - Aqua regia / Tartaric acid / ΔΔ

T.T. No.	SAMPLE No.	Au ppb	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	*Sb ppm	Sr ppm	Ti %	V ppm	Zn ppm
163	DR-048024	5	0.2	2.91	17	59	0.6	5	2.70	0.2	62	18	50	89	5.91	0.53	13	18	1.98	479	2	0.14	23	0.17	92	40	34	0.56	313	63



Cherry

27-May-93date

Assay Certificate

Page1

Noranda Exploration

WO 13922

Sample #	Au ppb 30gm F/A	Cu ppm
DR 48001	38	878
48002	10	503
48003	10	55
48004	7	29
48005	19	42
48006	14	207
48007	36	812
48008	187	1972
48009	49	1883
48010	21	162
48011	15	70
48012	19	165
48013	219	619
48014	31	1216
48015	17	279
48016	10	123
48017	7	15
48018	5	17
48019	9	70
48020	10	98
48021	7	101
48022	3	40
48023	4	155

Certified by 



APPENDIX III

DRILL LOGS

HOLE AZ-93-1 (P-3) 11000E 1170S -60°

Page 1 of 2

FROM	TO	ROCK TYPE	DESCRIPTION	GEO TECH						GEOCHEM				SAMPLING			
				FROM	TO	% RECOVERY	% CPY					FROM	TO	PPB AU	PPM CU	FROM	TO
0	4.2	OYR	BOULDERS OF SHAEN. SAME MATERIAL AS CORE DESCRIBED BELOW			20%											
4.2	6.0	SK	MAGNETITE EPIDOTE GARNET SHAEN HOSTED IN FERRUGINOUS CALCITE. 1% CPY WEAKLY CALCIANOUS TR PY			90	1				38	378		4.2	6.0	048001	
6.0	8.0	SK	SAME BUT RETROGRADE ACTINOLITE STAINING HIGH.			100	0.3				10	503		6.0	8.0	048002	
8.0	10.0	SK	MALACHITE STAINING ON EPIDOTE. RARE OF VEINLETS.			100	Tr				10	55		8.0	10.0	048003	
10.0	12.0	SK	Patches of dark disseminated calcite in fine-grained epidote			93	-				7	29		10.0	12.0	048004	
12.0	14.0	SK				100	Tr				19	42		12.0	14.0	048005	
14.0	16.0	SK	A FEW RISBS OF CPY, SPICULAR HEMATITE common			100	0.1				14	207		14.0	16.0	048006	
16.0	18.0	SK	SAME GIVEN PY (0.1%)			100	0.3				36	812		16.0	18.0	048007	
18.0	20.0	SK	SAME			100	1.0				187	1972		18.0	20.0	048008	
20.0	22.0	SK	MAGNETITE & CPY common 21-22cm			100	0.2				49	1885		20.0	22.0	048009	
22	24	SK				100	Tr				21	162		22.0	24.0	048010	
24	26	SK				100	-				15	70		24.0	26.0	048011	
26	28	SK				93	-				19	165		26.0	28.0	048012	
28	30	SK	One METRIC OF-CP. VEIN 10mm wide			100	-				219	619		28.0	30.0	048013	
30	32	SK	40 cm SECTION OF 3% CPY			100	0.5				31	1216		30.0	32.0	048014	
32	32.6	SK									17	279		32.0	34.0	048015	
32.6	34	HF	CONTACT: 90° @ 32.6 (IRREGULAR)														
32.6	34	HF	HF = HORNBLASE SEDIMENT? FINE-GRAINED DARK GREEN INDURATED NON-CALCIANOUS CALCITE ON FINE FRACTURE PLANES SCATTERED SURROUNDING LATHES OF OF-CP WITH EPIDOTE CENTRES. A FEW EPIDOTE VEINLETS OR SOME FRACTURES RARE PYRITE	SOME	F.G.	DISSEMINATED	PHYRICE										
34.0	36.0	HF	FINE OF STROKWORK (WEAK) A FEW EPIDOTE VEINLETS OR SOME FRACTURES RARE PYRITE			100	-				10	123		34.0	36.0	048016	
36	38	HF	SAME			100	-				7	15		36.0	38.0	048017	
38	40	HF	MITE IN A FEW SILICA-PLUGGED FRACTURES TEXTURE CHANGES TO FELTID (SOFTER)								5	17		38.0	40.0	048018	
40	42	HF	EPIDOTE & Calcite FRACTURES A FEW OF-EPIDOTE PHYRICE	VEINLETS		100	-				9	70		40.0	42.0	048019	
42	44	HF	INCREASINGLY FRACTURED - TWO 10-70 CM ZONES OF SHAGBARK SHEARS @ 45° TO CORE AXIS.			48	-				10	98		42.0	44.0	048020	
45.8	45.8	HF	SLIGHTLY FRACTURED - BROKEN CORE			100	-				7	101		44.0	46.0	048021	

