3172

A REPORT ON

AN AERIAL GEOPHYSICAL SURVEY

ON THE

SD, FAT, BH, SO, JJ, AN, PBE & XO

GROUPS OF MINERAL CLAIMS

NEAR GRAND FORKS, B.C.

82E / 1E & W, 8W, 9W

TABLE OF CONTENTS

SUMMARY AND CONCLUSIONS

In September, 1970 Canex Aerial Exploration Limited and B & H Prospecting carried out a joint aerial survey over claims held by the latter in the Grand Forks area of south-central British Columbia.

The helicopter was equipped with a differential spectrometer measuring radioactivity from four sources (uranium, thorium, potassium and all sources), an aerial magnetometer, and a radioaltimeter, all recording continuously on a single tape. In addition, throughout part of the survey a continuous strip of the terrain being flown was recorded on video tape.

The original intent was to fly the area on regularly spaced, parallel traverse lines; however, since terrain and wind conditions did not permit satisfactory maintenance of ground to aircraft distance, a regular grid was abandoned in favor of contour flying.

Of the four radioactive graphs only the uranium channel was considered to have usable results and any peaks on the uranium channel were recorded on the maps as "U ch".

Such uranium channel "peaks" occurring on the claims were checked out on the ground using ground scintillometers. They were found to be due to exposed areas of radioactive granite or pegmatite of well below ore grade.

Magnetic reactions of possible significance were also recorded on the plans. Three of these anomalous magnetic reactions, occurring outside the claim group, checked out on the ground; none were found to

be related to detectable mineralization.

It is concluded that the aerial results and ground follow-up failed to indicate sufficient possibilities for economic mineralization to warrant further work on the basis of aerial results. At the same time the aerial radioactive results should not be considered definitely negative, since even shallow overburden will effectively mask radioactivity, and the possibility of buried radioactive deposits within the survey area exists.

INTRODUCTION

During the summer of 1970 a prospecting partnership called B & N Prospecting made a number of uranium discoveries in an area a few miles northeast of Grand Forks, B.C. As consequence a large number of claims were staked to cover the showings as well as potentially mineralized ground in their general vicinity. The claims are listed below:

Claims Name	Tag Number	Record Number	Record Date
SD 1 - 28	137453M-137480M	33075-33102	July 8, 1970
SD 29-36	172308M-172315M	33103-33110	"
SD 37-66	172316M-172345M	33154-33183	July 24, 1970
SD 67-78	172355M-172366M	33427-33438	August 4, 1970
FAT 1-30	172431M-172460M	33230-33259	July 28, 1970
BH 1-24	172401M-172424M	33184-33207	"
BH 25-28	172485M-172488M	33208-33211	"
BH 29-38	172469M-172478M	33212-33221	"
BH 47-54	172467M-172484M	33222-33229	"
BH 63-64	172346M-172347M	33439-33440	August 4, 1970
BH 65-66	172353M-172354M	33441-33442	"
BH 67-70	172367M-172370M	33443-33446	"
BH 71-88	172537M-172554M	33447-33464	"
BH 89-99	172619M-172629M	33389-33399	"
BH 100-106	172630M-172636M	33400-33406	"
BH 107-110	172727M-172730M	34011-34014	Sept. 2, 1970
BH 111-132	172641M-172662M	33465-33486	August 5, 1970
SO 67-78	172489M-172500M	33335-33346	August 5, 1970
JJ 1 -16	172681M-172696M	33305-33320	"
AN 1-14	172601M-172614M	33321-33334	"
PBE 1-42	172501M-172542M	33347-33388	"
PBE 43-60	172903M-172960M	33744-33761	August 17, 1970
PBE 61-74	173012M-173025M	33923-33936	August 26, 1970
PBE 75-76	172359M-172360M	33937-33938	"
PBE 77	172749M	33939	"
PBE 78-79	172789M-172790M	33940-33941	"
PBE 80-86	172917M-172923M	33942-33948	"
PBE 87-88	172929M-172930M	33949-33950	"

Claim Name	Tag Number	Record Number	Record Date
PBE 89	172238M	33951	August 26, 1970
PBE 90-96	172382M-172388M	33952-33958	"
PBE 97	172770M	33959	"
PBE 98	172600M	33960	"
PBE 100-101	173010M-173011M	33766-33767	August 17, 1970
PBE 43A-46A	173061M-173064M	33762-33765	August 26, 1970
HO 1-10	172583M-172592M	33726-33735	August 17, 1970
HO 11	172597M	33736	"
HO 12-13	192593M-192594M	33737-33738	"
HO 14	192599M	33739	"
HO 15	192598M	33740	"
HO 16-17	192595M-192596M	33741-33742	"
HO 18	172428M	33743	"

In September, 1970 an agreement was made between Canex Aerial Exploration and B & H Prospecting (later Cronus Minerals Limited) whereby Canex agreed to carry out aerial prospecting for radioactive minerals over the property and surrounding area as directed by B & H Prospecting represented by the writer. Since the aircraft to be used was also equipped with an aerial magnetometer, it was decided to record magnetic readings as well.

INSTRUMENTATION

Canex supplied a Hughes 500 helicopter equipped with the following instrumentation:

(1) Airborne magnetometer, Barringer Research Ltd., Model AM-104.

(2) Differential Gamma Ray Spectrometer, Exploranium Corporation of Canada, Model DGRS-1000 recording contributions of Potassium-40, Bismuth-214, Thallium-208 as well as total intensity count, (Bismuth 214 is a daughter product of uranium and Thallium 232 of Thorium).

(3) Radioaltimeter, Bonzer, Model TRN-70.

(4) Power Inverter, Flitetronics Co., Model PC-16.

(5) Lightbeam Oscillograph, Clevite Corporation, Model 16-2300-00.

Detailed specifications on the above instruments are included in Appendix 1.

Readings from the magnetometer, spectrometer and altimeter were recorded continuously as seven separate graphs on a single tape.

FLIGHT PROCEDURE

The original intent was to fly a regularly spaced grid on parallel lines; however, it was found that satisfactory ground to aircraft distance could not be maintained on grid lines due to steep topography and air conditions. The grid was therefore abandoned in favor of contour flying. The aircraft was held as close as possible to 400 feet above the ground.

Crew: The crew consisted of a pilot and instrument operator supplied by Canex, and the writer acting as navigator and director of the operation.

Navigating procedure:

The aircraft was equipped with a continuously recording video camera but this was found to be unsatisfactory due to lack of distinguishing features on the relatively narrow strip recorded. Actual navigation was accomplished by manually marked fiducial points on existing government topographic maps and aerial photographs; corresponding numbers were simultaneously marked on the recording tape.

INTERPRETATION AND PLOTTING

The recording tapes were examined in detail by Mr. Thornton, the instrument operator and by the writer. It was concluded that the only data worthy of plotting on plans were the anomalous peaks on the uranium channel (Bismuth-214) and sections where the magnetics are significantly different from the average for the area.

Uranium Channel Results

None of the radioactive results can be classed as strong reactions; that is none would suggest the presence of ore grade uranium mineralization exposed over a significant area of the surface. However, because partially buried strong sources can sometimes yield only minor reactions, any peaks on the uranium graph that were fairly sharp and showed significantly above background were plotted on the plans. They are coded as U ch for Uranium channel.

Magnetometer Results

The survey was run primarily to delineate any radioactive zones and the magnetic readings were recorded without much regard to absolute magnetic intensity. However, the average field in the Grand Forks area is approximately 58,200 gammas and the maximum variation in readings in the area surveyed was approximately 4,000 gammas, that is from 57,000 to 61,000 gammas. The roughness of the magnetic survey suggests the term "anomaly" be used with reservation. Points or sections of the flight lines showing more than 1,000 gammas variation above or below the average for the area are indicated on the accompanying plans.

Ground Checking

Most of the uranium channel indications showing any promise of uranium mineralization were checked out on the ground by prospectors Buller and Haydukewich and by the writer, using SRAT SPP2 ground scintillometers. Anomalous areas were located as closely as possible using the aerial navigation maps. Uncontrolled, but systematic traverses were then made over a sufficiently large area to cover the estimated errors in navigation. Areas of above normal radioactivity in both fine grained granite and pegmatite were located on the ground but none showed any obvious economic potential and consequently none were outlined in detail.

SUMMARY OF EXPENSES

Canex expenses as per attached	$4,592.00
J.S. Kermeen - navigator - supervision - consulting 6 days @ $125.00 (Sept. 3,4,5,22,23,24, 1970)	750.00
Ground follow up:	
J.S. Kermeen - 6 days @ $125.00 (between Oct. 1 and 30, 1970)	750.00
W. Buller - 12 days @ $30.00 (between Oct. 1 and 30, 1970)	360.00
S. Haydukewich - 12 days @ $30.00 (between Oct. 1 and 30, 1970)	360.00
Camp expenses re Buller and Haydukewich 24 man days @ $6.00	144.00
Ground scintillometer rentals	100.00
	$7,056.00
Portion applicable to Cronus Mineral ground	$5,600.00

J.S. Kermeen, P. Eng.

CANEX - CRONUS JOINT AERIAL PROGRAM

In September 1970 an agreement was made between Canex Aerial Exploration and B & H Prospecting (later Cronus Minerals Limited) whereby Canex agreed to carry out aerial prospecting of the mineral property now owned by Cronus Minerals, and the surrounding area as directed by B & H Prospecting. Canex supplied a Hughes helicopter equipped with a four-channel differential spectrometer, an aerial magnetometer, a recording altimeter and a video camera. M. Sanderson and J. Thornton of Canex acted as pilot and instrument operator respectively. J.S. Kermaen, representing B & H Prospecting, was navigator and directed the operation. The original flying was done on September 4 and 5, but due to instrument malfunction the area was reflown on September 22, 23 and 24.

The four channels of the differential spectrometer measured radioactivity from potassium, thorium, uranium and all sources. This data as well as magnetometer readings and altimeter readings were continuously recorded on a single tape. A continuous strip of the terrain being flown over was recorded on video tape which could be correlated with the geophysical data tape. However, due to lack of distinguishing features on the narrow strip, control was established chiefly by fiducial points marked on maps or photos by the navigator.

An attempt was first made to fly grid lines at even intervals across the property. However, due to the steep terrain, heavy loading of the aircraft and weather conditions it was found to be impossible to maintain a satisfactory elevation above the ground on grid lines. Consequently a system of flying contours was adopted which proved to be much more satisfactory.

All flight lines and fiducial points are plotted on accompanying plans Nos. CR-70-7, 8 and 9.

Any interesting magnetic or radioactive data was picked off the recorder tapes and is indicated in color on the same plans.

EQUIPMENT

1. Airborne Magnetometer, Barringer, Model AM-104
2. Differential Gamma Ray Spectrometer, Exploranium Corporation of Canada, Model DGRS-1000
3. Radio Altimeter, Bonzer, Model TRN-70
4. Static Inverter, Flitetronics Co., Model PC-16
5. Strip Chart Recorder, 8-Channel, Optical Type Brush, Model 16-2300-00

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1. Airborne Magnetometer, Barringer Research Ltd., Model AM-104

The Airborne Magnetometer is a nuclear precession instrument measuring the total magnetic field intensity. The field intensity is displayed in digital form and is also available in analogue form via converted digital information.

Specifications

Range: 20,000 to 100,000 gammas
Resolution: 1 gamma
Accuracy: ± 1 gamma
Cycle rate: 1.115 seconds
Instrument drift: 0 after 5-minute warm-up period

Output

Analogue: 2 channels
(a) 0 - 990 gammas
(b) 0 - 9 gammas
Current output, 1 ma into 2500 ohms impedance

Digital:
(a) Five cold cathode display tubes, "Nixie"
(b) B.C.D. for each of 5 digits of field intensity

2. Differential Gamma Ray Spectrometer,
Exploranium Corporation of Canada, Model DGRS-1000

The DGRS-1000 is a precision airborne Gamma ray spectrometer having four channels for the measurement of Gamma radiation from up to four radioactive sources. Normally, three channels are calibrated to record the contributions of Potassium-40, Bismuth-214 and Thallium-208 to the Gamma ray spectrum. The fourth channel is operated as a total intensity count, measuring the total gamma radiation above 1 MEV.

Bismuth-214 is the daughter product of Uranium-238, and Thallium-208 is the product of Thorium-232.

Special interaction elimination circuits allow almost 100% discrimination between the three radioactive elements when they are in secular radioactive equilibrium.

The instrument detects gamma radiation by the use of a thallium doped Na I crystal and three photomultiplier tubes. As the output is temperature- and voltage-sensitive, spectrum stabilization techniques are used. A Cesium-137 source in a feedback loop maintains the pulse height constant over a wide temperature range.

System is comprised of:

(a) High voltage power supply
Regulation range: ± 100 volts
Stability: 0.2% per ^{o} C
Nominal output voltage: 1000 volts

(b) Detector assembly (detector, pre-amplifier, amplifier)
Crystal: Na I(Tl), Sodium iodide thallium activated crystal
Crystal size: 8" diameter X 4" thick
Resolution: 8.3% at 1000 volts and 0.662 MEV

Amplifier
Output voltage: 0 to 10 volts - positive pulses - 1 microsec. duration
Output impedance: 0.5 ohms
Overload recovery time: 20μ sec for 250 X overload
Linearity: ± 1%
Stability: 0.1% per ^{o} C.

The detector assembly consists of the crystal enclosed in a stainless steel shell with a thin window giving a pick-up angle of 90 degrees. Three photomultiplier tubes are firmly mounted on the crystal housing. Gain and focus of each photomultiplier tube are individually variable, thus insuring that all three are balanced. Each tube is magnetically shielded.

The crystal and photomultipliers are mounted in a protective enclosure which is lined with six inches of polyurethane foam to protect the crystal from thermal shocks. This insulation also decreases drift in the overall system. A small Cs-137 source is included in the enclosure and is used for spectrum stabilization.

The preamplifier-amplifier combination is mounted on the outside of the detector assembly.

(c) Spectrum stabilizer

Input range: 0 to 10 volts - positive pulse of 1 microsec duration

"Threshold" level: 0 to 10 volts - front panel controlled

"Window": 0 to 10 volts - front panel controlled

Threshold and window stability: .5 mV per ^{o} C

Linearity, Differential: 1.5% of full scale

Integral: 0.2% of full scale

Integration time constants: 1, 2, 5, 10 sec.

Stabilization output: $\pm$ 2 volts

Regulation: holds photopeak of Cs-137 to within 0.1% of centre in 25% photopeak shift within the system.

The spectrum stabilizer is connected to the output of the main amplifier and measures the Cesium-137 gamma radiation. Pulse heights (proportional to gamma radiation energy) about a mean value of 1 volt $\pm$ 0.05 volt are divided into two parts, pulses between 0.95 volts and 1.0 volts, and those from 1.0 volt to 1.05 volts. The number of pulses in each part is summed and an error voltage is generated which drives the high voltage power supply to reduce the difference between the two parts of the Cesium response to a minimum. In this manner the spectrum is stabilized for temperature and minor input voltage variations.

(d) Single channel analyzer - Ratemeters (4 used)

Analyzer Section:

Specifications: as for spectrum stabilizer including:-

Operation mode: Differential or integral

Multiple pair resolution: 1.5 microsec

Ratemeter section:

Range: 0 to 50, 100, 1000 counts/second

Range multiplier: 1, 2, 4, 8, 16, 32, 64, 128, 256

Linearity: 1%

Output: 0 - 10 mV (custom modified to drive recorder)

Output linearity: 0.2% full scale

Meter and output zero adjustment on front panel.

Within two of the analyzer-ratemeters are included spectral interaction circuits, one for the Uranium Channel, and one for the Potassium Channel.

The Thorium Channel analyzer-ratemeter and the total count channel analyzer-ratemeter are identical. The total count channel is operated in the integral mode, recording all pulses above 1 MEV.

K-40 Channel set to accept energies from	1.38 MEV to 1.53 MEV
U-238 Channel (Bi-214)	1.67 MEV to 1.85 MEV
Th-232 Channel (Tl-2C8)	2.49 MEV to 2.75 MEV

Spectral interaction for the Uranium Channel is accomplished by setting the Thorium Channel to full scale with a pure Thorium sample. By means of a potentiometer, the output of the Uranium Channel is reduced to background. The Potassium Channel output is then reduced to background in the same way.

A pure Uranium source is used to eliminate the contribution of the uranium peaks to the K-40 Channel.

In this manner, the three channels record the gamma radiation of the three sources with a minimum of interaction (assuming spectral equilibrium of the samples).

3. Radio Altimeter, Bonzer, Model TRN-70

The Bonzer radio altimeter is a vertical measuring device with a meter readout instrument in the aircraft console. It measures terrain

clearance to within 5% from 80 feet to 2,500 feet. Output from the meter circuit is supplied to the analogue data recorder.

Specifications

Input power: 28 VDC, 0.6 Amps
Operating range: 80 to 2,500 feet
Accuracy: ± 5%
Output: Meter calibrated - 80 to 2,500 feet

4. Power Inverter, Flitetronics Co., Model PC-16

Input voltage: 28 VDC, ± 2 volts
Input current: 14 Amps DC full load
Output voltage: 115 VAC, ± 5%
Power - 250 volt amps for 115 volts AC
Freq. - 60 ± 1 cycles/sec.
Output waveform: single phase sine wave
Weight: 16 lb.

The Flitetronic Static Inverter is an excellent DC to AC converter providing a 60-cycle, 115-voltage source with a minimum of distortion in the output waveform. It causes very little noise to be developed in the aircraft power bus. Its frequency accuracy guarantees proper operation of other AC power driven devices.

Low distortion in the output waveform and the lack of transients in the aircraft power system, results in very clean traces on the oscillograph, and proper operation of the digital magnetometer.

5. Lightbeam Oscillograph, Clevite Corporation, Model 16-2300-00

Specifications

Power requirements: 60 cps, 115 volts, 100 watts
Number of channels: 8
Recording speeds: 0.2, 0.4, 1.0, 2.0, 5.0, 10, 25, 50 inches/sec., also X 1/100 of above (normally 0.1 inches/second)
Writing speed: in excess of 20,000 inches/second
Light source: dual filament, tungsten lamp

Trace linearity: ± 1.0% on outer channels, 0.5% on inner channels
Galvanometer protection: individually fused on rear panel
Galvanometer type: 11-2111-20, 60μA/inch
Recording paper: 11-2542-62, slow speed paper
Accessories: trace interrupt(facilitates channel identification in case of cross overs); amplitude grid mask, 0.1 inch grid; fotolyzer lamp - direct photochemical processing of exposed paper
Galvanometer impedance: 105 ohms
Fuse resistance: 75 ohms

The strip chart recorder monitored all seven analogue data channels as below:

Channel 1	Uranium	1.5" deflection = 50 counts/sec
2	Potassium	1.0" deflection = 50 counts/sec
3	Thorium	1.0" deflection = 50 counts/sec
4	Total Count (Scintillometer)	1.5" deflection = 400 counts/sec
5	Coarse (Magnetometer)	4.0" deflection = 990
7	Altimeter	0.5" delfection = 100' @ 300'

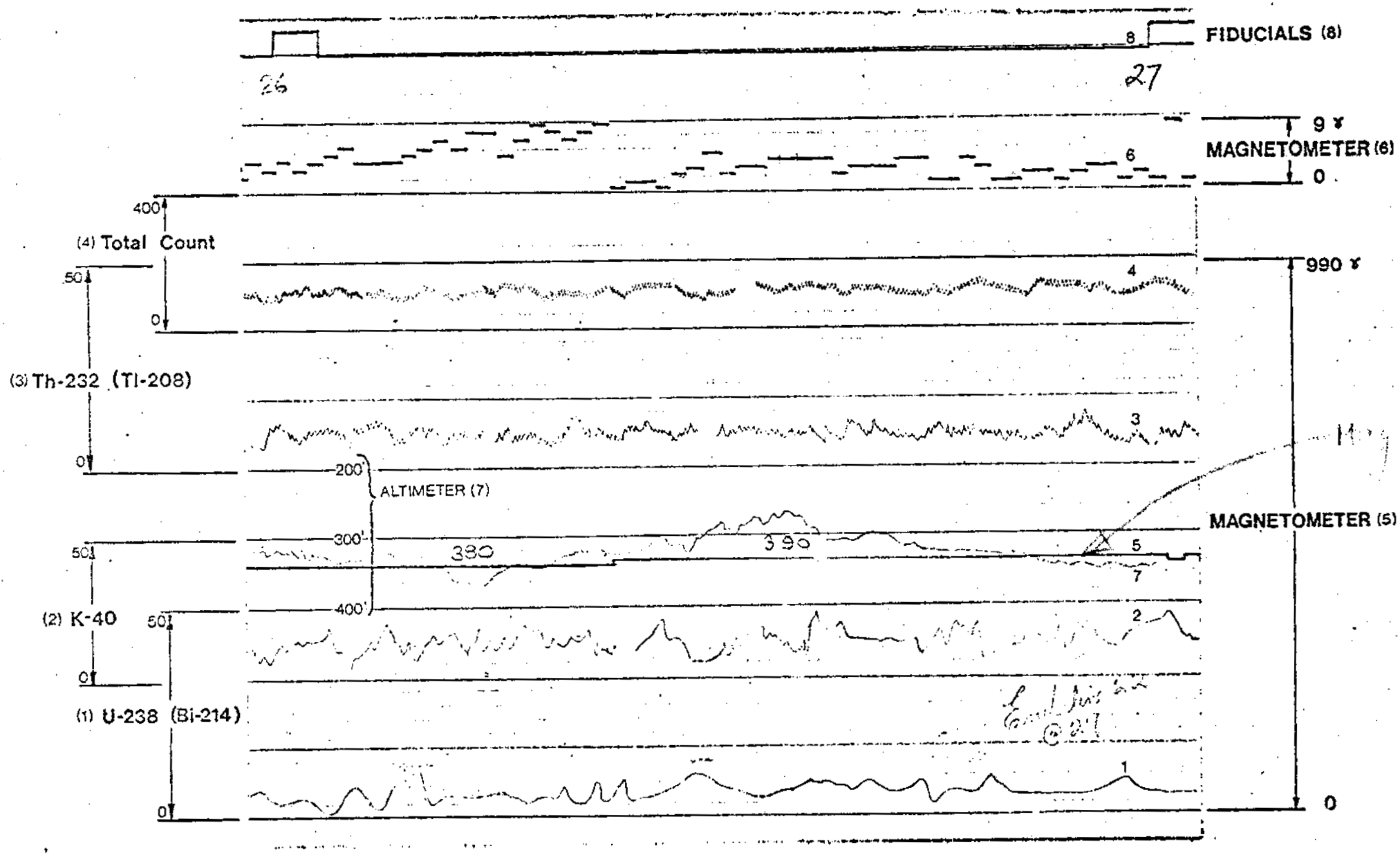
The eighth channel was used as an event marker producing a 0.2" deflection for each event recorded.

Simple Resistive Pads were used in each channel of data output to match the characteristics of the recorder. See Appendix C for further details.

The equipment was carried by a Hughes Model 500 helicopter with the electronics for the magnetometer and scintillometer being mounted in the rear compartment with the recorder. The scintillometer detecting crystal was fixed on a platform outside the helicopter and the magnetometer sensing head trailed in a "bird" at the end of a 60-foot cable.

The Bonzer altimeter was mounted on the lowest part of the belly of the aircraft and its readout instrument mounted in the console panel. The output also supplied the altitude channel of the recorder.

The event marker consisted of a foot operated button which triggered a mechanical counter. Each count was displayed on the optical strip chart as a 0.2 inch deflection which lasted the length of time the button was depressed.



TYPICAL FLIGHT RECORD

GENERAL INFORMATION

1.1 INTRODUCTION

The Barringer Airborne Magnetometer has been designed specifically for airborne use and utilizes the principle of nuclear precession to measure total magnetic field intensity. The field is displayed, in gammas, by five inline digital indicators and is also made available in analog and digital form to facilitate data recording.

Maximum use has been made of solid state and integrated circuit techniques to ensure reliability, and controls have been minimized so that the instrument is simple to operate. The instrument has a choice of operating modes so that measurements may be initiated manually, automatically or remotely.

1.2 SPECIFICATIONS

Range: 20,000 to 100,000 gamma

Resolution: 1 gamma

Accuracy: ± 1 gamma

Tuning: Manually operated, 16 position switch with overlapping ranges.

Cycle Rate: Minimum cycle time of 1.114 seconds. (See Section 3.6.2)

Internal, preset from 1 second to 3 minutes continuous cycling.

External, single cycle or continuous 1 second cycling.

Manual, single cycle

Indicators: Latched display, 5 cold cathode numerical indicator tubes with 0.6" numeral height.

Outputs: Analog, current and voltage output. 0-99 gamma and 0-990 gamma.

Current output, 1m.A. into 2.5 K ohm max. Voltage output, 100 mV into 18 K ohm min.

Outputs: Digital, parallel output 5 figure 1248 B. C. D.

Levels: low, -0.5 volts (logic 0)

high, +18 volts through 56 K ohms (logic 1)

Current sink capability, 1.6mA

Max. allowable load to ground, 4 K ohms

Print Command: negative going 18 volt amplitude, 250μ sec. pulse width.

External Operation: by contact closure, 100 ohms maximum loop resistance.

Closure time $\geq 10\mu$ sec.

$<$ min. cycle time

Monitor Points: Precession Signal

Counter Gate Waveform

Signal Frequency x 64

Polarize Voltage Waveform

Polarize Command Waveform

Frequency Multiplier Filter Waveform

Power Requirements: Magnetometer, 28v ± 5v d.c. @ 1.5 amps.

Polarizing, 4 amps.

Grounding: Chassis grounded, front panel floating

Temperature Range: Operating, -10°C to +50°C

Humidity: 0-95% R.H. over temperature range.

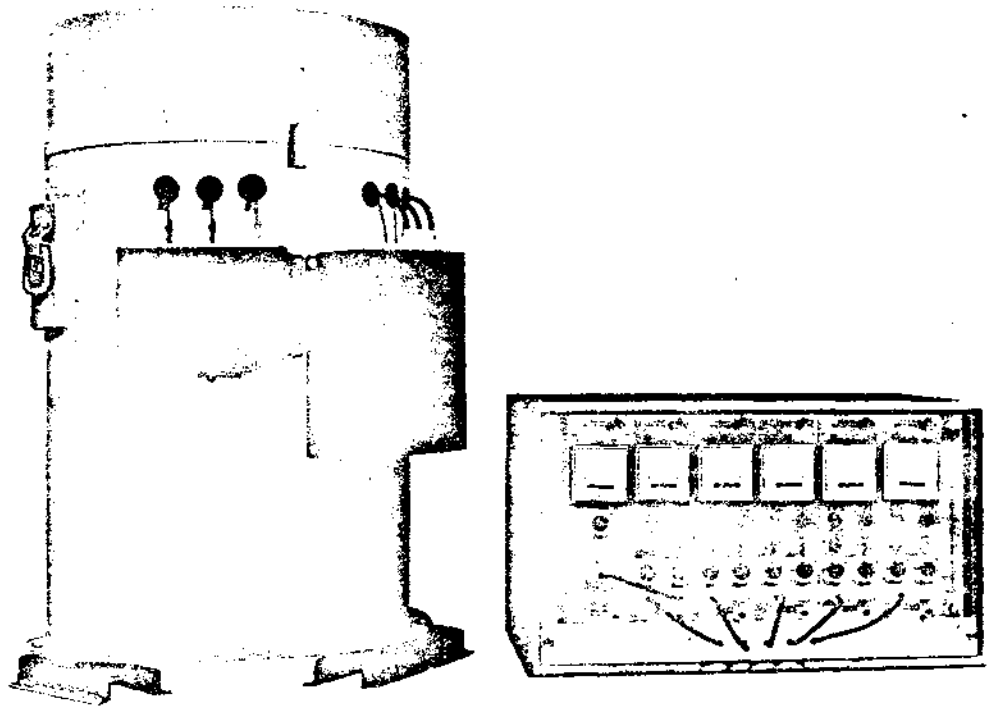
Size: 19" x 3.5" x 10", front panel mounting slots to fit standard 19" rack

Weight: 10.6 lbs.

BARRINGER RESEARCH

FOUR CHANNEL DIFFERENTIAL GAMMA RAY SPECTROMETER

Model DGRS - 1000



DESCRIPTION

The Model DGRS-1000, four channel differential gamma ray spectrometer has been developed to provide the survey and mining industry with a system to obtain precise radioactive quantative analysis from aircraft, and ground vehicles.

The system may be used for bore hole logging with a special detector, in laboratories, or at base camps.

The four channels are: 1. potassium -40 2. bismuth -214 3. thallium -208 4. total count or integral.

Spectral interaction has been eliminated by using specially developed techniques, which results in 100% discrimination between the three radioactive elements.

A large volume detector, 8" x 4" NaI (Tl) coupled to three matched photomultiplier tubes is used to obtain high sensitivity. The pulse height at the output of the detector is maintained constant as function of temperature by using spectrum stabilization techniques. As a reference element, the radioactive isotope Cesium -137 is used. The system conforms to the USAEC recommended standard instrument module and bin design as covered by TID-20893.

FEATURES

Integrated circuits have been used throughout the system, which resulted in a unique and small package and also provides maximum reliability. All analogue and pulse processing circuitry has been temperature compensated by using the latest integrated circuits. Each channel may be used for spectrum analysis by using spectrum scanning techniques. Plug-in modular construction allows system building, from one to four channels.

Temperature compensated analogue computer circuits are used, to provide spectral interaction elimination, resulting in 100% discrimination.

The system has been designed, incorporating nuclear instrumentation techniques, with an extended operating temperature range.

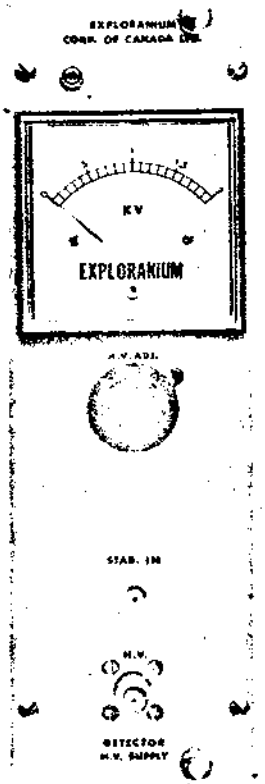
EXPLORANIUM

CORPORATION OF CANADA LIMITED — NUCLEAR INSTRUMENT DIVISION

1415 LAWRENCE AVENUE WEST • TORONTO 15, ONTARIO, CANADA

TELEPHONE: 248-6463 (AREA CODE 416)

JANUARY, 1969

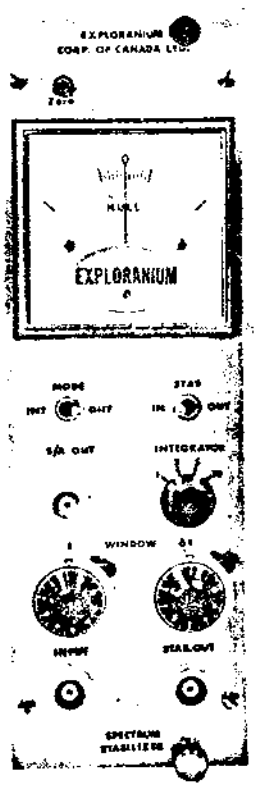


High Voltage Power Supply
The high voltage power supply may be remotely regulated to control the gain of the photomultiplier tubes. A separate input has been provided for this purpose. The regulation range is ± 100 volts.

SPECIFICATIONS

Range: 0 to 1,500 volts, controlled by 10 turn potentiometer.
Stability: .2% °/C
Operating Voltage: 1,000 v
Ripple: 3 mv

Spectrum Stabilizer:
To guarantee the high resolution of the detector and maintain a constant pulse height as function of temperature and aging, spectrum stabilization techniques must be used. Cesium -137, a monoenergetic radioactive isotope has a single gamma emission at .662 Mev and a half life of 32 years. The ultra stable photopeak of Cesium -137 is used as a reference. The method is based upon a comparison technique. The photopeak is divided into two parts with the peak as center point. The integral of the left part is compared with the integral of the right part and when both are equal a zero output signal is the result. Any change in system gain will produce a shift in the measured photopeak. This shift is measured and converted to an error signal. The error signal is then fed back 180° out of phase as a correction signal to the high voltage power supply.



SPECIFICATIONS

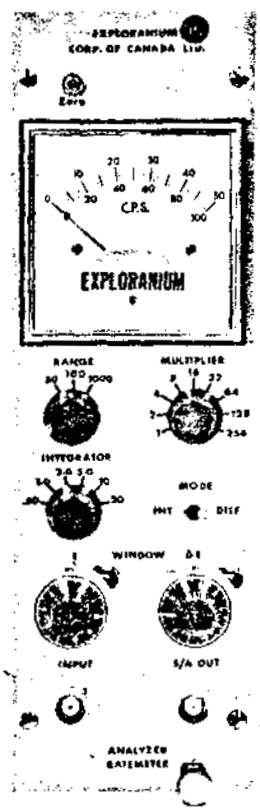
Input range: 0 to 10 volts – positive going pulse – pulse width 1 μs.
Input impedance: 1000 ohms
"E" Discriminator range: 0 to 10 volts – controlled by a 10 turn potentiometer
"ΔE" Discriminator range: 0 to 10 volts – controlled by a 10 turn potentiometer
"E" and "ΔE" baseline stability: .5 mv /°C
Window stability: better than .5 mv/°C
Integral linearity: .2% of full scale.
Differential linearity: 1.5% of full scale.
Integration Time Constants: 1 – 2 – 5 – 10 sec.
Spectrum shift as function of countrate: 2% at 50,000 cps.
Single channel output: +3v – pulse width 150 ns
Stabilization output (error signal): ± 2 volts
Gain regulation: about .1% of the loop gain.
Regulation: Holds photopeak of Cs -137 to within .1% of the center in a 25% photopeak shift in the system.

Single Channel Analyser Ratemeter

The Model DGRS-1000 comprises four of these units. This unique module contains a differential single channel pulse height analyser and a precision linear ratemeter. The operation of the single channel analyser is based upon a window method. If an incoming pulse (event) representing a certain amount of energy in Mev, exceeds a preset baseline ("E") level it will activate a discriminator. The discriminator produces a pulse which is routed to a memory. If the incoming event is not exceeding another level ("ΔE") which is higher than the ("E") level, the pulse will be released out of memory and a single channel output occurs. If the incoming event exceeds the ("ΔE") level, it will activate the "ΔE" discriminator generating an inhibit signal, which in turn causes a coincidence and no single channel output is generated. This method allows the selection of a certain window width in Kev or percentage of full scale, independent of the "E" baseline level. The "E" baseline control may be used to sweep the spectrum in order to find peaks of interest. The single channel analyser has two selectable operation modes:

(1) differential (2) integral

The events appearing at the output of the single channel analyser are counted by a precision linear ratemeter. Its unique design allows accurate recording and displaying of countrates produced by the single channel analyser. All pulse and analogue processing circuitry has been temperature compensated. A temperature compensated analogue computer has been incorporated which may be used for spectral interaction elimination.



Single Channel Analyser Specifications:

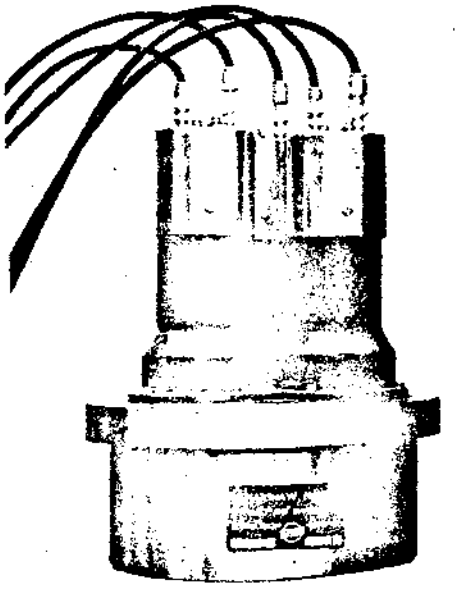
Input range: 0 to 10 volts, positive going pulse, pulse width 1 μs.
Input impedance: 1000 ohms
"E" discriminator range: 0 to 10 volts, controlled by a 10 turn potentiometer.
"ΔE" discriminator range: 0 to 10 volts controlled by a 10 turn potentiometer.
Integral linearity: .2% of full scale.
Differential linearity: better than 1.5% of full scale.
"E" and "ΔE" baseline stability: .5 mv/°C
Multiple pair resolution: 1.5 μs.
Operation mode: differential – integral – selectable by switch located on front panel.
Single channel output: + 3 v – pulse width, 150 ns
Spectrum shift as function of countrate: 2% at 50,000 cps.

Linear Ratemeter Specifications:

Ranges: 0 to 50 cps
0 to 100 cps
0 to 1000 cps
Range multiplier: 1 – 2 – 4 – 8 – 16 – 32 – 64 – 128 – 256
Meter linearity: 1% full scale
Integration time constants: .5 – 1 – 2 – 5 – 10 – 20 seconds, zero to full scale.
Recorder output: 0 to 10 mv
Linearity: .2% full scale.
Meter zero adjustment: located on front panel.

DETECTOR

The Harshaw Chemical Company selects specially for Exploranium Corporation sodium iodide thallium activated crystals with unique resolutions of 8.3% or better at .662 Mev at 1,000 volts. The diameter is 8" and the thickness is 4". Larger or smaller crystals to special order. The crystal is coupled to three selected photomultiplier tubes. The gain and focus of each photomultiplier tube can be varied individually. The crystal is mounted in a low background stainless steel case with a thin entrance window. The three photomultiplier tubes are magnetically shielded and are mounted with stainless steel tube bases. The crystal assembly is mounted in a protective enclosure, which is lined with 6" of polyurathene foam to protect the crystal from thermal shocks. An ambient temperature change of 75°C per hour will cause a change of temperature inside the enclosure of not more than 10°C per hour. The crystal is suspended in 6" of semi-hard foam.



Pre-Amplifier – Main pulse amplifier

The pre-amplifier is a low noise, low gain m.o.s. amplifier. The outputs of the photomultiplier tubes are summed at the input of the pre-amplifier. To prevent loading of the photomultiplier tubes, a very high input impedance is required. The pulse shape appearing at the output is R-C shaped, with a decay constant of about 30 μs. The main pulse amplifier consists of an amplifying section of which the gain can be selected, a pulse current limiter, a delay line pulse shaping network and a low impedance output buffer. The output pulse is gaussian shaped with a pulse width of about 1 μs. The maximum output is 10 volts. Both amplifiers are mounted on the detector enclosure.

PRE-AMPLIFIER SPECIFICATIONS

Input impedance: 1 M Ohms – negative going pulses.
Input capacity: 5 pf
Gain: X1.
Input pulse time constant: 30 μs.

SYSTEM SPECIFICATIONS

Power Requirement: 110 V.A.C. or 12 V.D.C., or 28 V.D.C. at 75 Watts.
Instrument Weight: 55 lbs.
Detector Weight: 8" x 4" crystal housing–75 lbs.

MAIN AMPLIFIER SPECIFICATIONS

Gain: 1 – 2 – 4 – 8 – 10.
Overload recovery: for 250 x overload about 20 μs.
Pulse shape: Gaussian – pulse width 1 μs.
Output: 0 to 10 volt maximum – positive going.
Maximum output load: 50 Ohms.
Stability: .1%/°C.
Differential linearity: ± 1%
Output impedence: .5 Ohms.

WARRANTY

The instrument is warranted free from material defects and poor workmanship for a period of one year from the date of shipment and defective material will be replaced free of charge during this period unless the equipment has been modified, adjusted and/or changed as a result of misuse, in which case this warranty is void.

Should repairs outside the warranty be required, then repairs will be made at our standard service rates.

RESERVED RIGHTS

Exploranium Corporation of Canada Ltd., reserves the right to adjust engineering specifications in the best interests of maintaining high quality instrumentation.

PRINTED IN CANADA

CANEX AERIAL EXPLORATION LTD.
DIVISION OF CANADIAN EXPLORATION LIMITED
700 BURRARD BUILDING VANCOUVER 5, B.C. CANADA

March 25, 1971.

File: 11-1-6.

Mr. J.S. Farmer,
P.O.Box 83,
Grand Forks, B.C.

Dear Jim:

Don asked me to gather the information you requested.

Canex Aerial Exploration Ltd. undertook a preliminary airborne survey for B & H Prospecting in September 1970 at a cost shown below:-

Flying:	240 line miles at $10/line mile	2,400
	10 hours helicopter at $185/hour	1,850
Expenses:	M.Sanderson (Accommodation, meals, etc.)	
	J.Thornton	142
Drafting & Interpretation		200
		$4,592

I trust you will find this adequate for your needs.

Regards.

Yours very truly,

CANEX AERIAL EXPLORATION LTD.

J. M. Thornton

J.M.Thornton

JMT/mm

c.c.D.C.Rotherham

A

REPORT ON

A SOIL SAMPLE TRAVERSE

ON THE

PBE GROUP OF MINERAL CLAIMS

GRAND FORKS, B.C.

BY

J.S. KEMMEREN, P. ENG.

The PBE group of mineral claims are part of a large block of claims lying a few miles north of Grand Forks, B.C. The property was originally staked by B & H Prospecting and is now held by Cronus Minerals Limited.

Occurrences of copper, molybdenum, tungsten and uranium were known to exist on the claims, and in October, 1970 it was decided to run a trial soil sample traverse. Samples were taken from upper parts of the "B" zone at intervals of 100 feet, along a line bearing NE along the southeast bank of the Granby River on claim PBE 66. Samples were run by atomic absorption at Chemex Labs. Ltd. for copper, molybdenum, tungsten and uranium. The results are shown on the attached plan.

Copper, molybdenum and tungsten results show no anomalous readings. On the other hand, nine of the 15 uranium results show 1.0 ppm or greater and are probably anomalous. The reading of 11 ppm is exceptionally high for uranium.

Obviously, the amount of data returned is insufficient to base any conclusions upon. However, the uranium results are sufficiently interesting to suggest that further soil sampling should be carried out in the area.

J. S. KERMEEN, M.Sc., P.Eng.
CONSULTING GEOLOGICAL ENGINEER

PHONE 604-442-8472

P.O. BOX 83, GRAND FORKS, B.C.

August 23, 1971

REFERRED TO	DATE	INITIAL
D. M.		
C.G.C.	✓	
C.C.		
D.C.G.C.		
D.C.C.		
ACCTS.		
C.M.B.	✓	
C.I.		
C.A.		
R. T.		
C.P.E.		

FILING CLERK

Mr. R.H. McCrimmon,
Chief Gold Commissioner,
Department of Mines and Petroleum Resources,
Victoria, B.C.

9643

Dear Sir:

Re: File No. 116 - Greenwood
PBE, GT, BH, SD, etc. Claims

I am submitting herewith an expanded report on the aerial & gophysical carried out over this ground. I trust this report will answer queries 1 to 4 inclusive in your July 28th letter.

In regard to query 5: the heavy lines adjacent to McRae Creek do no relate to the airborne survey; they presumably delineate water sheds and happened to be on the government base maps upon which the aerial results were plotted.

I presume in query 6 you refer in part to the geochemical "survey"; I enclose a brief report on this together with a map showing the results of soil sampling.

Regarding other items, the four wheel drive truck rental is actually applicable to both ground checking of aerial surveys and physical work. Office work is applicable to both. Assay fees are for samples from various trenches throughout the property.

I trust this will provide you with the necessary information.

Yours truly,

J.S. KERMEEN

JSK/fm
Enc.

AUG 25 '71 PM

DEPT. OF MINES
AND PETROLEUM RESOURCES

SUMMARY OF EXPENSES

Canex expenses as per attached	$4,592.00
J.S. Kermeen - navigator - supervision - consulting 6 days @ $125.00 (Sept. 3,4,5,22,23,24, 1970)	750.00
Ground follow up:	
J.S. Kermeen - 6 days @ $125.00 (between Oct. 1 and 30, 1970)	750.00
W. Buller - 12 days @ $30.00 (between Oct. 1 and 30, 1970)	360.00
S. Haydukewich - 12 days @ $30.00 (between Oct. 1 and 30, 1970)	360.00
Camp expenses re Buller and Haydukewich 24 man days @ $6.00	144.00
Ground scintillometer rentals	100.00
	$7,056.00
Portion applicable to Cronus Mineral ground	
	$5,600.00

J.S. Kermeen, P. Eng.

SUMMARY OF EXPENDITURES

J.S. Kermeen, P. Eng. 1 day (October 17, 1970) @ $125.00	$125.00
W. Buller - 1 day @ $30.00 (October 3, 1970)	30.00
S. Haydukewich - 1 day @ $30.00 (October 3, 1970)	30.00
Camp expenses re above	12.00
Laboratory determinations 15 @ $6.00	90.00
	$297.00

J.S. Kermeen

J.S. Kermeen, P. Eng.

GRANBY RIVER

N

PBE 65
PBE 63
PBE 66
PBE 64

Syenite

SHAFT

ADIT

Lst.

Stripped dred

SHOWING 9

26	18	78	21	12	10	33	14	16	20	14	24	14	15	14	Cu	p.p.m.
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	Mo	"
<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	W	"
6	0.5	<0.5	1.0	6.5	2.0	11	3.5	5	5	1.5	0.5	<0.5	<0.5	<0.5	U	"

SHOWING 11
+ Mo

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3172 MAP #1

CRONUS MINERALS LIMITED

SOIL SAMPLE TRAVERSE
MINERAL CLAIM — PBE 66
Grand Forks, B.C.

SCALE: 1 IN. = 200 FT. | October 1970

J. S. Kermeen, P.Eng.

46954 75'
Cu - <.01%
Mo - <.001%
Ag - .03 oz/ton

46955 120'
Cu <.01%
Mo <.001%
Pb <.01%
Sb <.01%
Ag .03 oz/ton
Au <.003 oz/ton

46956 100'
Cu <.01%
Mo <.001%
Ag <.01 oz/ton

Saddle

Outcrop

Overburden

46959
Cu - 0.11%
Mo - <.001%
Ag - 0.55 oz/ton

46960
Cu <
Mo <
Ag

"Selected grab"
Ag 582 oz/ton

White Quartz vein

"SILVER VEIN"

22227
Au Tr
Ag 1.3 oz/ton

22230
Au - nil
Ag - 0.4 oz/ton

"CARBONATE SHEAR"

22229
Au - nil
Ag - 0.5 oz/ton

22228
Au - nil
Ag - 0.4 oz/ton

22226
Au - Tr
Ag - 1.6 oz/ton

46961 250' WEST
10' CHIP SAMPLE ON FAULT
Cu 0.05%
Mo <.001%
Ag 0.01 oz/ton

SPOIL PILE

46958 - 200' WEST
GRAB SAMPLE
Cu <.01%
Mo <.001%
Ag <.01 oz/ton

Granite rock

BULLDOZED TRENCH IN OVERBURDEN
(Average depth - 6')

300 FT.

POE #2

POE #26

3172 M-18

SKETCH PLAN - SILVER SHOWING

MINERAL CLAIM POE 26

Scale : 1 IN. = 40 FT.

46957
Cu <.01%
Mo <.001%
Ag <.01 oz/ton

SAMPLES NOT SHOWN ON ACCOMPANYING PLANS

No. 46962 - Grab sample of syenite on mineral claim PBE 34.

Cu	.01%
MO	.001%
Sb	.01%
Ag	.01 oz/ton

No. 46952 - Grab sample of graphitic gneiss on mineral calim SD 14.

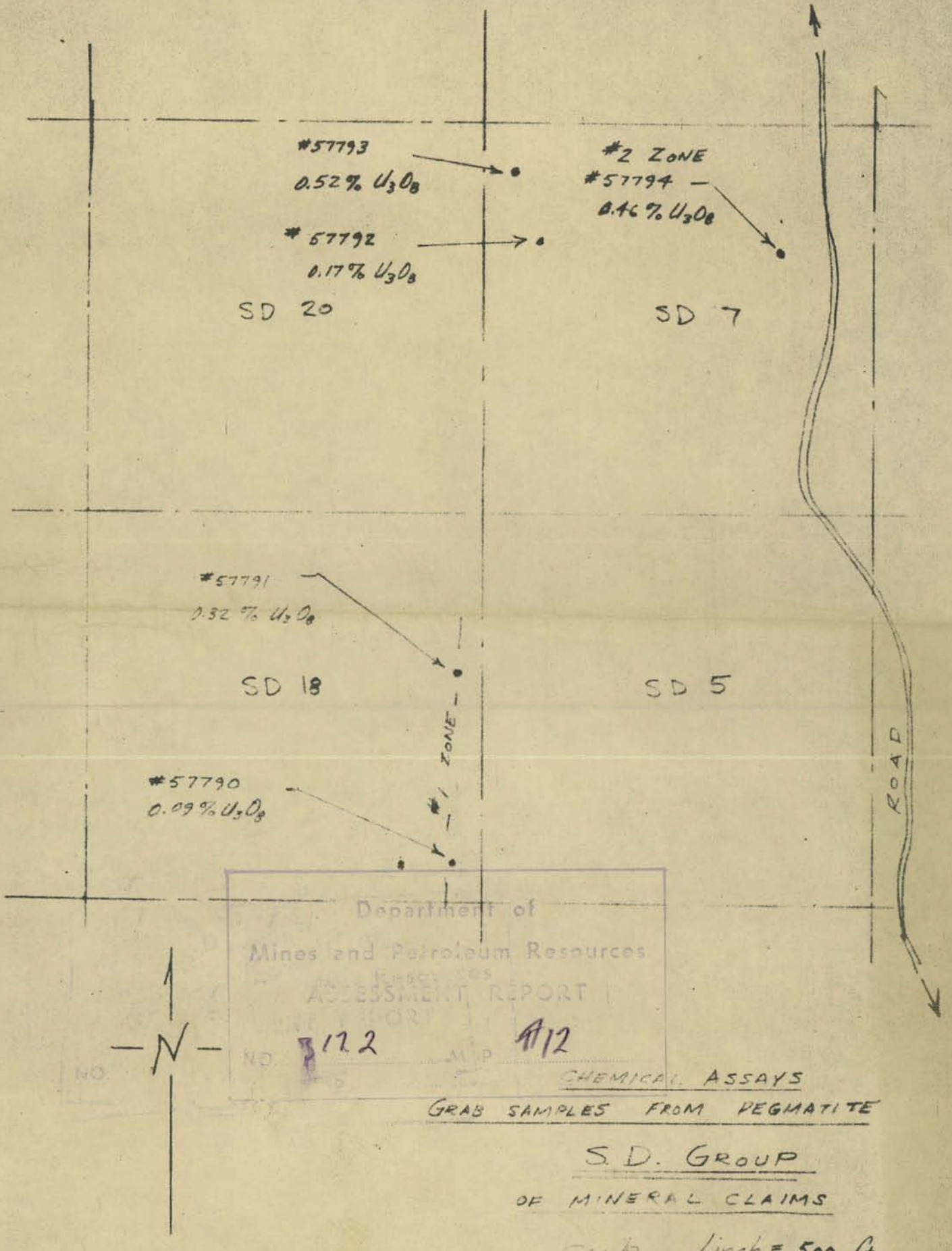
Mo	0.001%

No. 46963 - Chip sample across eight feet on east-west trending shear, dipping 45° North, on claim PBE 32 - heavy pyrite.

Cu	0.03%
Zn	0.03%
Pb	0.01%
Ag	0.07 oz/ton
Au	.003 oz/ton
Sb	0.03%

No. 46965 - Grab sample from outcrop near Granby River Fault on claim PBE 20.

Cu	0.01%
Zn	0.01%
Pb	0.01%
Ag	0.10 oz/ton
Au	.003 oz/ton
Sb	0.06%



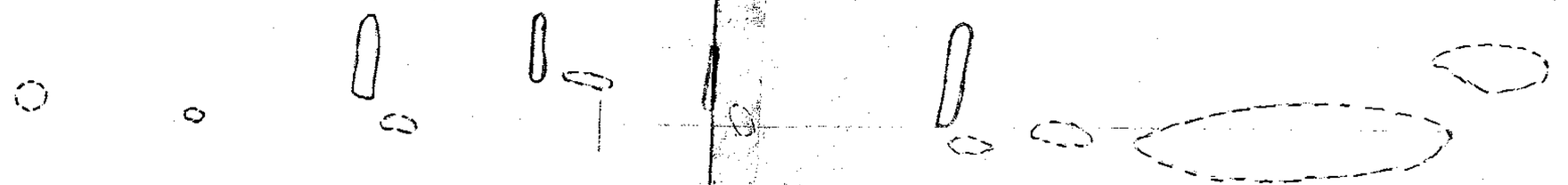
CHEMICAL ASSAYS

GRAB SAMPLES FROM PEGMATITE

S. D. GROUP

OF MINERAL CLAIMS

Scale. 1 inch = 500 ft.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3172 MAP #4

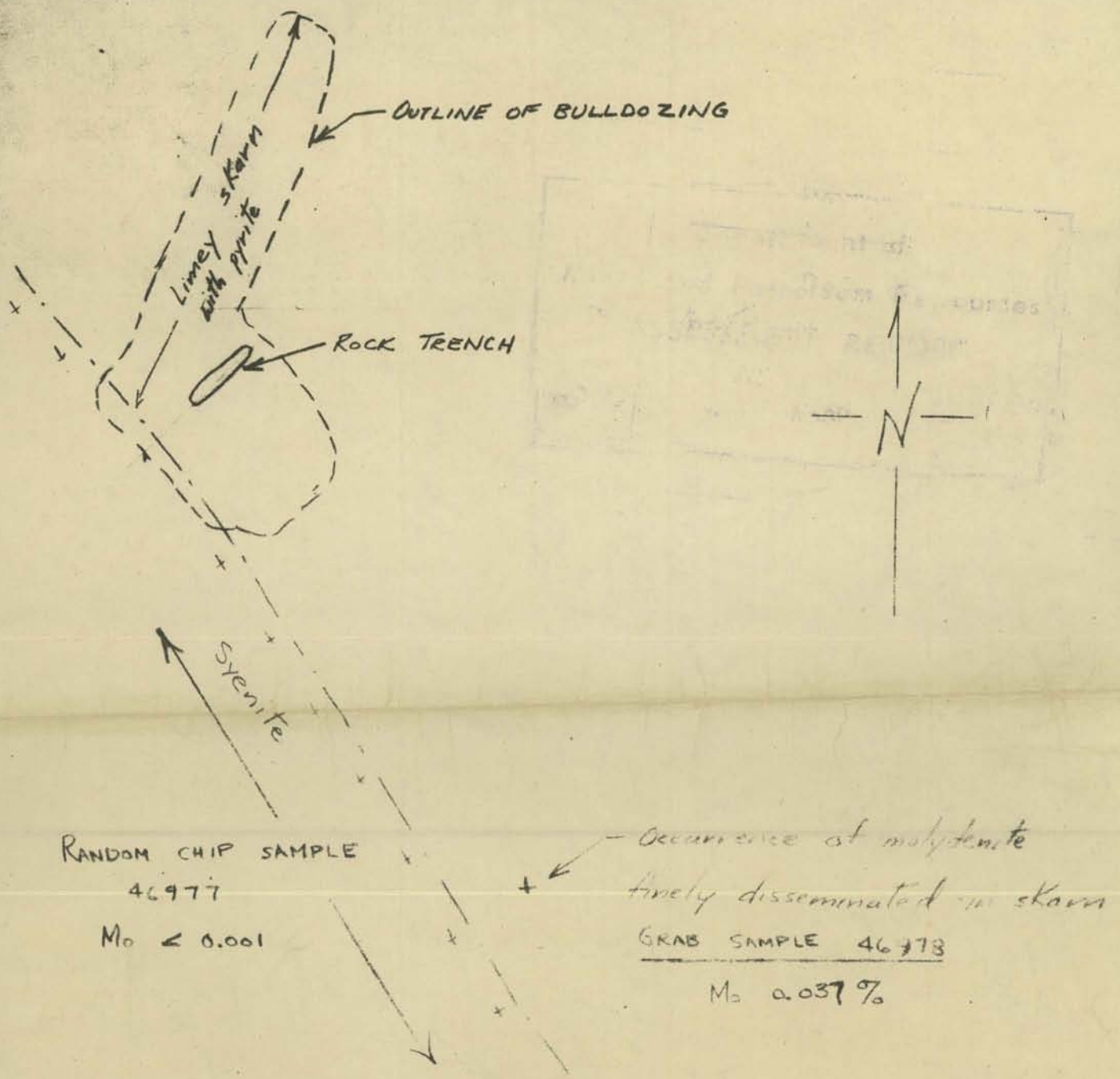
LEGEND

Outline of outcrop

Outline of trenches through overburden

CRONUS MINERALS LIMITED
No. 1 ZONE
SD GROUP OF MINERAL CLAIMS
GRAND FORKS, B.C
SCALE: 1IN. = 100' SEPT. 1970

CR-70-3



CRONUS MINERALS LIMITED

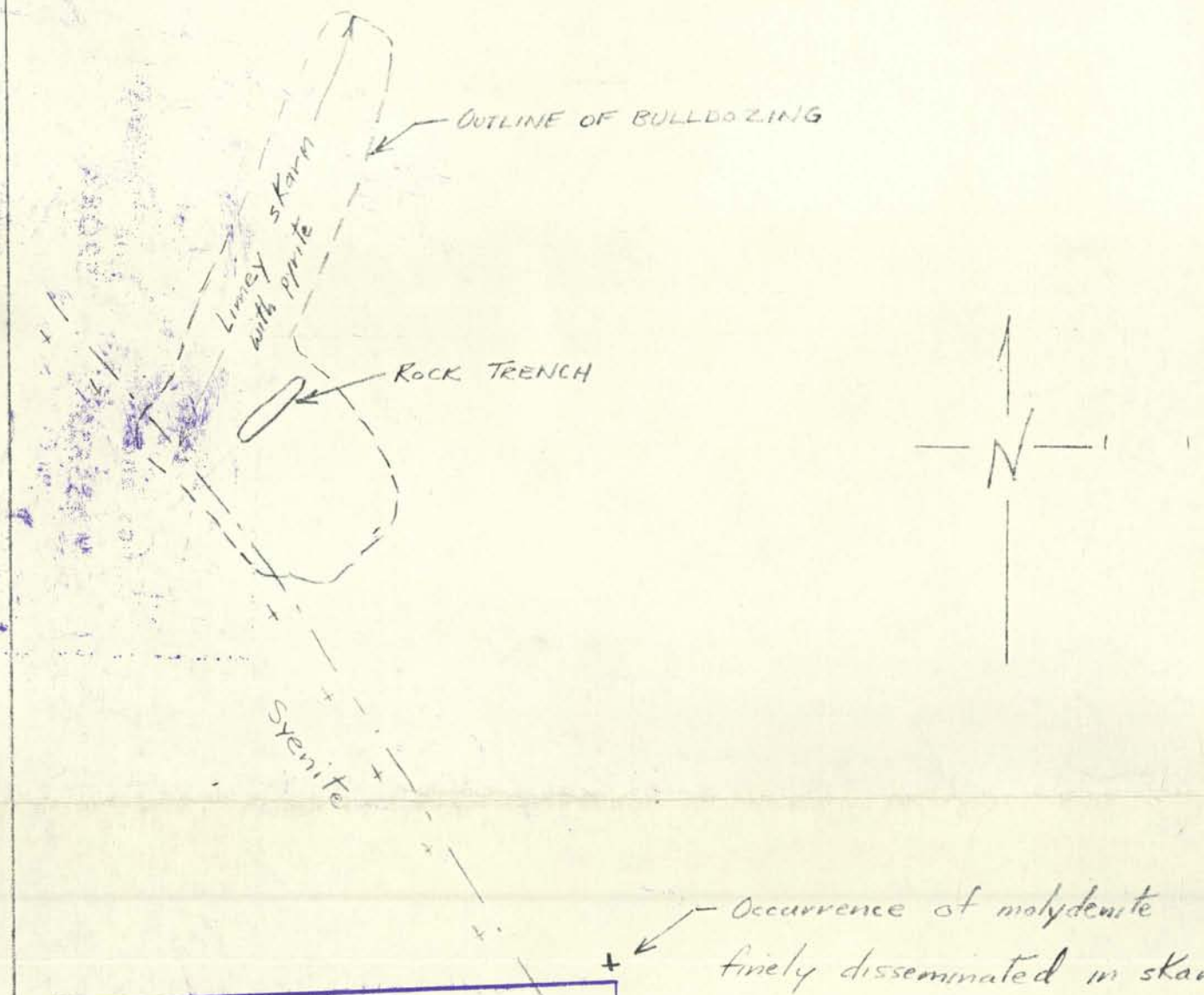
No. 8 ZONE

PBE GROUP OF MINERAL CLAIMS

GRAND FORKS, B.C.

SCALE 1IN = 40 FT.	JUNE 1971

CR-70-5 16



CRONUS MINERALS LIMITED

No. 8 ZONE

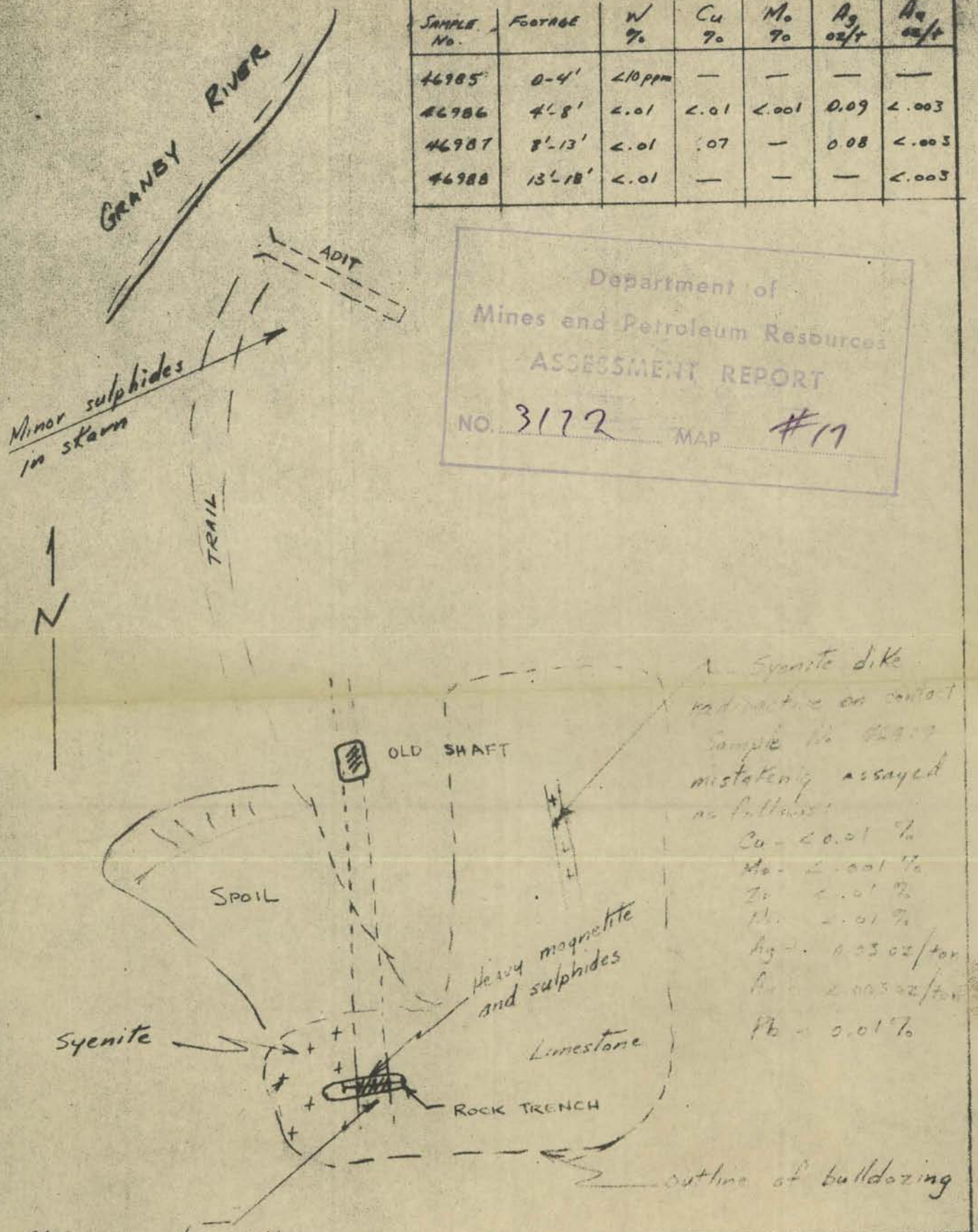
PBE GROUP OF MINERAL CLAIMS

GRAND FORKS, B.C

SCALE: 1IN = 40 FT.	JUNE, 1971

CR-70-5

Sample No.	Footage	W %	Cu %	Mo %	Ag oz/t	Au oz/t
46985	0-4'	<10 ppm	—	—	—	—
46986	4'-8'	<.01	<.01	<.001	0.09	<.003
46987	8'-13'	<.01	.07	—	0.08	<.003
46988	13'-18'	<.01	—	—	—	<.003



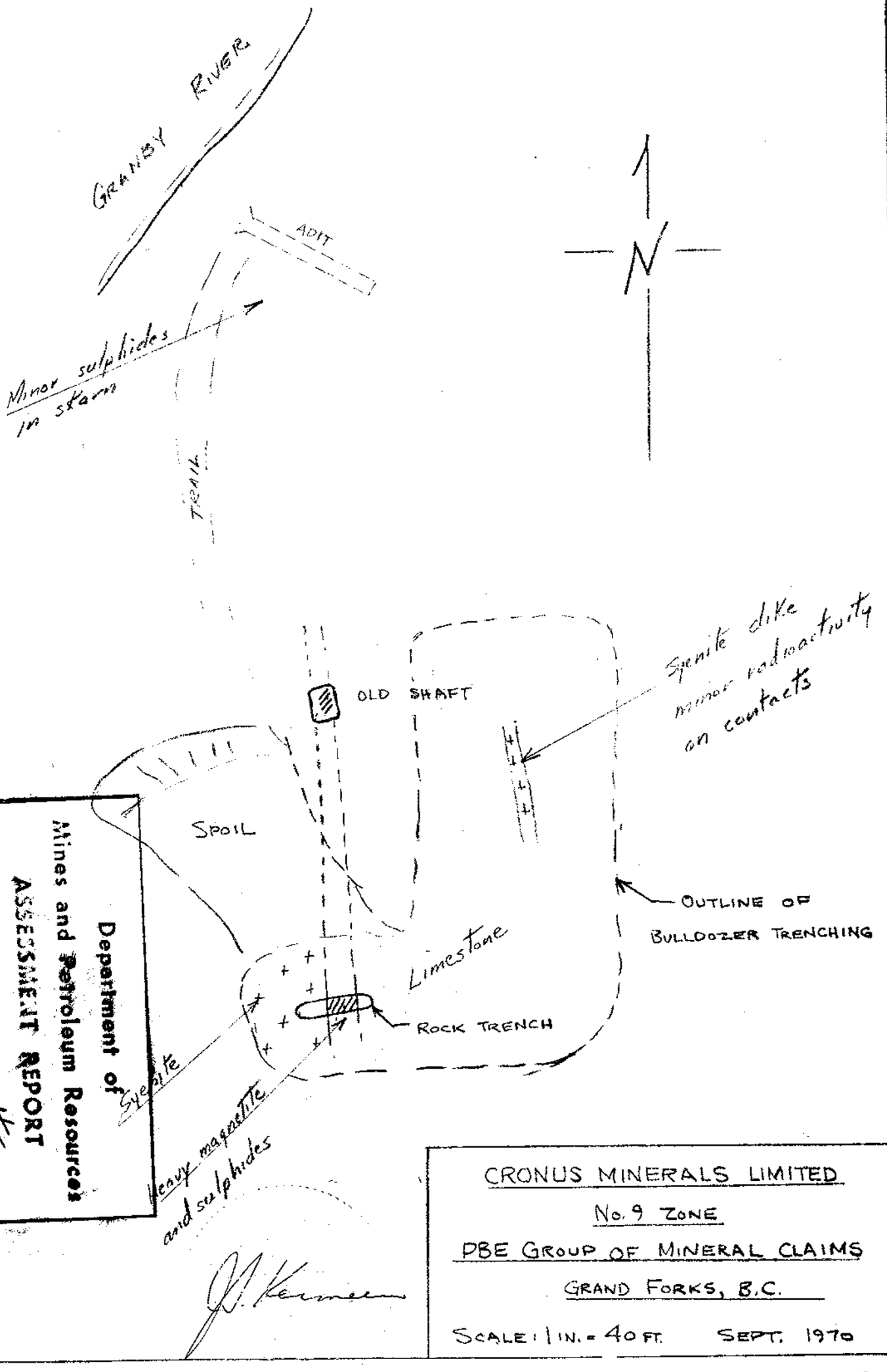
1 - Syenite dike
2 - Intrusive on contact
Sample No. 46987 mistakenly assayed as follows:
Cu - <0.01 %
Mo - <.001 %
Zn - <.01 %
Pb - <.01 %
Ag - 0.03 oz/ton
Au - <.003 oz/ton
Pb - 0.01 %

Chip samples taken east to west for 18 feet - see results above.

CRONUS MINERALS LIMITED
No. 9 ZONE
PBE GROUP OF MINERAL CLAIMS
GRAND FORKS, B.C.

17

SCALE: 1 IN. = 40 FT SEPT. 1970



CRONUS MINERALS LIMITED

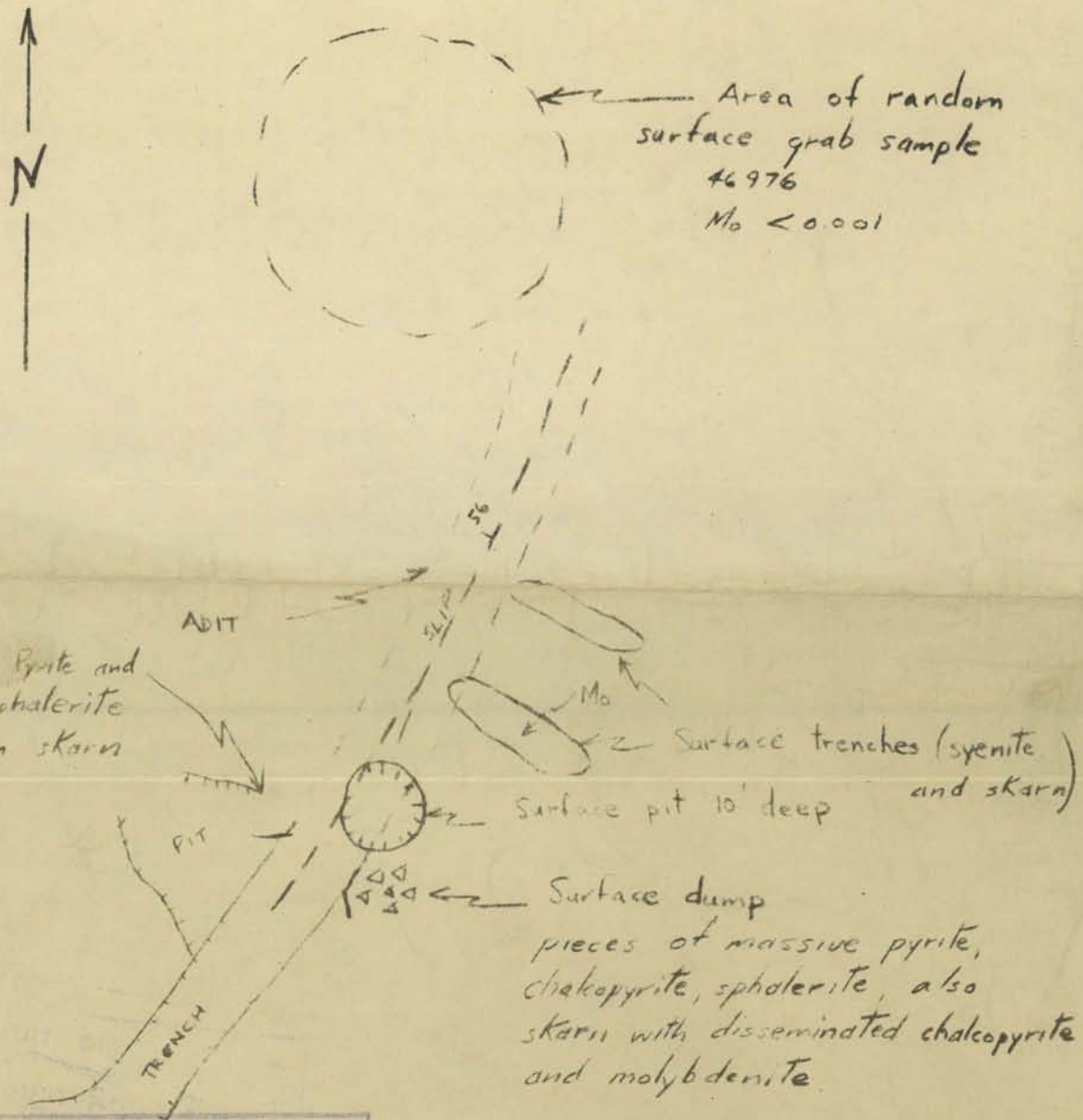
No. 9 ZONE

PBE GROUP OF MINERAL CLAIMS

GRAND FORKS, B.C.

SCALE: 1 IN. = 40 FT. SEPT. 1970

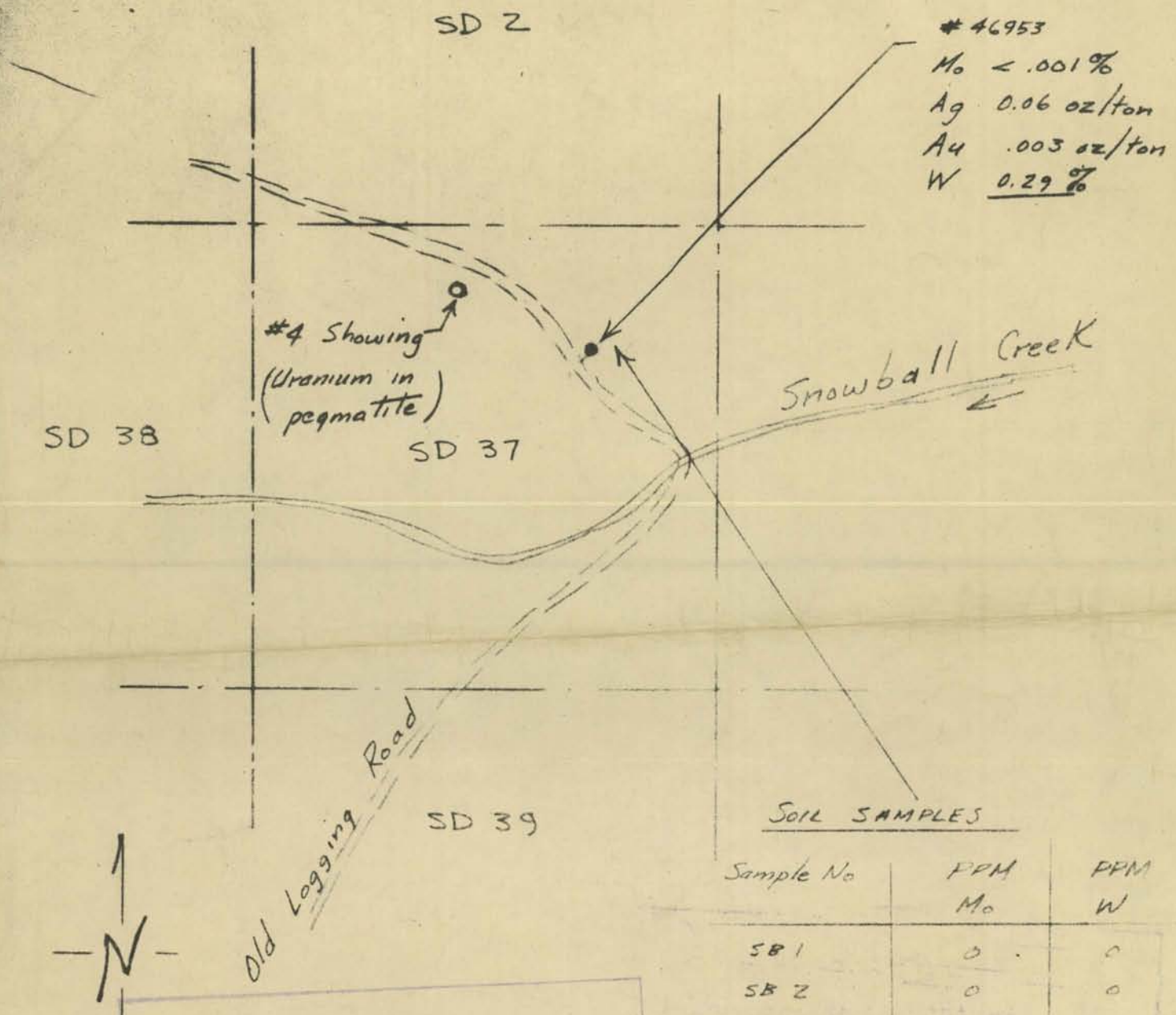
CR-70-6



SHOWING No. 7

Mineral Claim PBE No. 68

Scale 1 INCH = 20 FT.



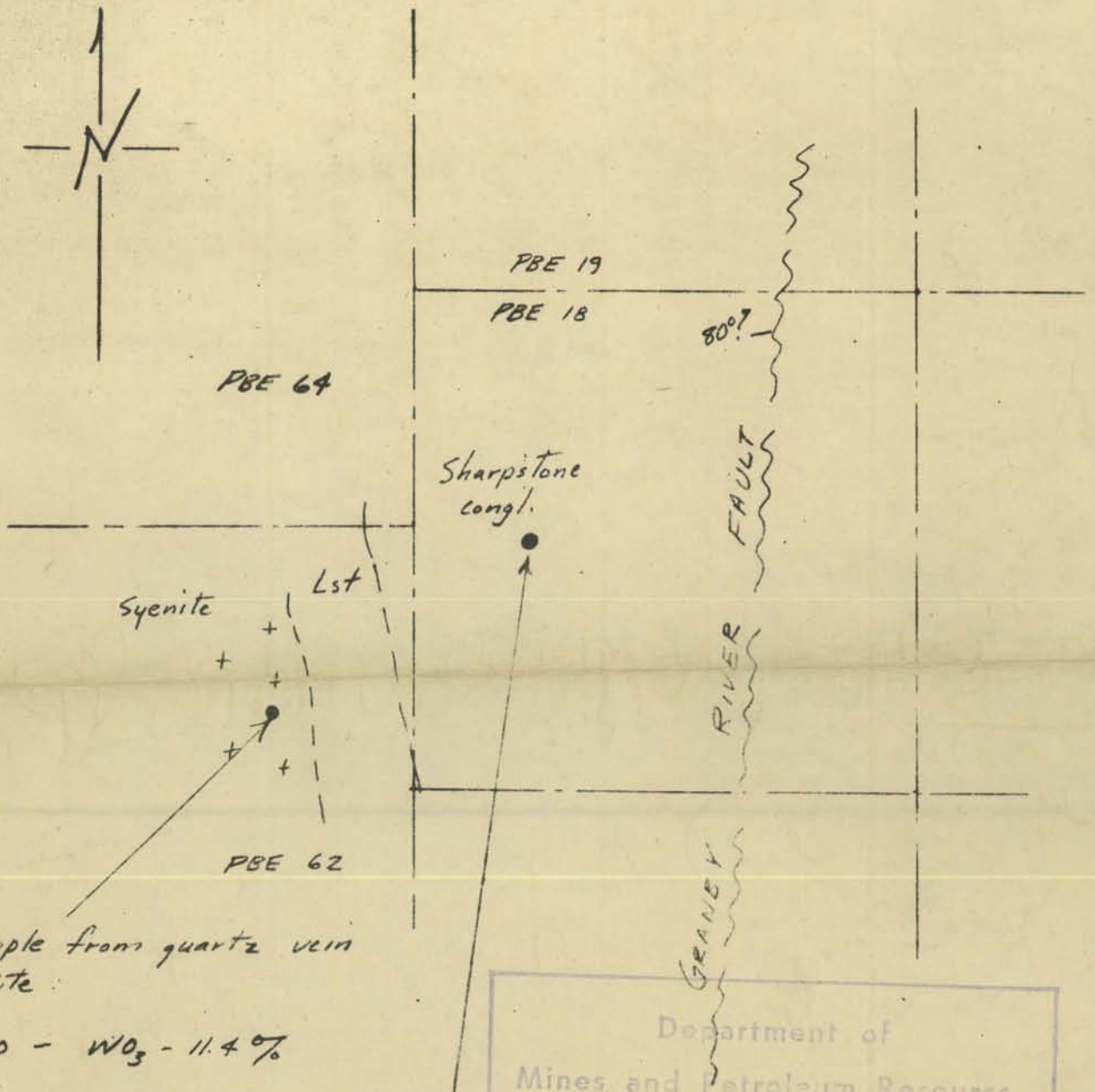
SOIL SAMPLES

Sample No	PPM Mo	PPM W
SB 1	0	0
SB 2	0	0
SB 3	0	0
SB 4	0	0

TUNGSTEN SHOWING

MINERAL CLAIM SD 37

Scale 1 inch = 500 ft.



Grab sample from quartz vein in syenite:

\# 46980 - WO_3 - 11.4%

Grab sample radioactive sharpstone conglomerate

\# 46983 - 0.06% U_3O_8 (chemical

URANIUM & TUNGSTEN SHOWINGS

PBE GROUP

SCALE: 1 INCH = 500 FT.

Sample No. 57790
U_3O_8 - 0.09 %

Sample No. 57791
U_3O_8 - 0.12 %

3172 4/11

LEGEND

Outline of outcrop

Outline of trenches through overburden

CRONUS MINERALS LIMITED

No. 1 ZONE

SD GROUP OF MINERAL CLAIMS

GRAND FORKS, B.C

SCALE: 1IN = 100' SEPT. 1970

CR-70-3

LEGEND

TERTIARY

- 13 Andesite
- G Syenite and/or monzonite

LOWER CRETACEOUS ?

- F Diorite
- E Quartz monzonite
- D Granodiorite (Nelson)

PRECAMBRIAN ---- to ----JURASSIC ?

- 12 Flow breccia and greenstone
- 11 Limestone: dark-light bedded and grey massive
- 10 Siltstone: grey, sandy
- 9 Sharpstone conglomerate
- 8 Knobhill formation-chert and greenstone
- 7 Amphibolite breccia
- 6 Argillite: black to grey, bedded, also graphitic and silty

AGE UNCERTAIN

- C Quartz-monzonite: crushed and mylonitized
- B Gneissic granodiorite
- A Syenite: clyno-pyroxene, hornblende

NOTE: A, band C grouped as Nelson intrusives by Little

PROTEROZOIC ?

- 5 Hornblende-rich gneisses and schists
  - 5a Biotite schist and calcareous schist
- 4 Quartzite and quartz-rich gneisses
- 3 Granite-biotite schists and gneisses
- 2 Silliminanite-biotite-schists and gneisses
- 1 Marble, calc-silicate, diopside rich rocks

NOTE: Rock types 1 to 5 are not necessarily in order of age and may contain up to 30% pegmatitic material

FAULT: major

minor

SHEAR ZONE

FRACTURE ZONE

BEDDING 50

FOLIATION & LAYERING IN PARAGNEISSES 50

FOLIATION IN INTRUSIVE ROCKS 50

OUTCROP OUTLINE

LOCATION OF MINERALIZED AREA

Up SYNGENETIC URANINITE IN PEGMATITE
Ua SECONDARY AUTUNITE IN FRACTURES
Mo MOLYBDENITE
Cp CHALCOPYRITE
Py PYRRHOTITE

CLAIM BOUNDARY

GRANBY RIVER

VOLCANIC CREEK

TORONTO CREEK

SNOWBALL CREEK

SAND CREEK

HULL CREEK

GRANBY

CLAIM BOUNDARY

CITY OF GRAND FORKS

B.C. HIGHWAY No 3

KETTLE RIVER

GEOLOGY AFTER V. PRETO Ph.d.
THESIS - McGILL UNIVERSITY

118° 30'

49° 00'

CANADA
UNITED STATES OF AMERICA

MINERAL PROPERTY OF

CRONUS MINERALS LIMITED

GRAND FORKS, B.C.

SD, SO, FAT, AN, BH, JJ, HO, & PBE GROUPS OF MINERAL CLAIMS

GEOLOGY MAP

J.S. KERMEEN CONSULTING GEOLOGICAL ENGINEER

SCALE | DATE: AUGUST 1970

CR-70-2

LEGEND

White pegmatite-granite 1
Fine-grained granite 2
Schist and gneiss 3

Scintillometer readings with SRAT SPP2-NF instrument, (background of 80 to 100 cps not deducted).

750 hip height reading

750/1000 hip height reading / reading on rock

TALUS SLOPE

Radioactive shear zone - to 3000 cps "red alteration" - 0.12% U_3O_8

Radioactive pegmatite readings to 400 cps

Bulldozer trench

Shear zone N 18° W

55°

Basic dike

Pit in overburden radioactive

BLASTED TRENCH (SEE CHART BELOW)

0.46% U_3O_8

N 20° W

Blasted pit Readings to 5000 cps before blasting.

BLASTED TRENCH		
SCINTILLOMETER READINGS – Cps.		
DISTANCES MEASURED FROM WEST TO EAST IN TRENCH		
DISTANCE (IN FEET)	INSTRUMENT AT HIP HEIGHT (AFTER BLASTING)	BOTTOM OF TRENCH (AFTER BLASTING)
0	400	850
5	750	1700
10	750	1350
15	550	950
20	300	230 GNEISS
25	250	180 GNEISS
30	750	650
35	700	1450
40	500	350
45	750	1600
50	550	700
55	500	420
60	650	1000
65	900	600
70	550	400
75	600	750
80	750	2000

ESTIMATED GRADE, EXCLUDING GNEISS SECTION 0.05% U_3O_8

CRONUS MINERALS LIMITED

GRAND FORKS, B.C.

SKETCH PLAN

Nº 2 ZONE

J.S. KERMEEN CONSULTING GEOLOGICAL ENGINEER

SCALE: 1 INCH = 40 FEET | DATE: NOVEMBER 1970

CR-70-4

TO NORTH SEE MAP 82 E/8 W

TO WEST SEE MAP 82 E/2 E

TO EAST SEE MAP 82 E/1 E

FLIGHT 1	23/9/70
FLIGHT 2	23/9/70
FLIGHT 3	23/9/70
FLIGHT 4	24/9/70
MAGNETOMETER (>1000ft)	
SCINTILLOMETER (Ud)	

U. S. A.

AIR DIVISION
DEPARTMENT OF LANDS AND FORESTS
BRITISH COLUMBIA

INTERIM MAP 82 E/1 W

DATE OF PHOTOGRAPHY 1970
DATE OF COMPILATION 1970

CRONUS MINERALS LIMITED

CANEX - CRONUS JOINT AERIAL PROGRAM

SEPT. 1970

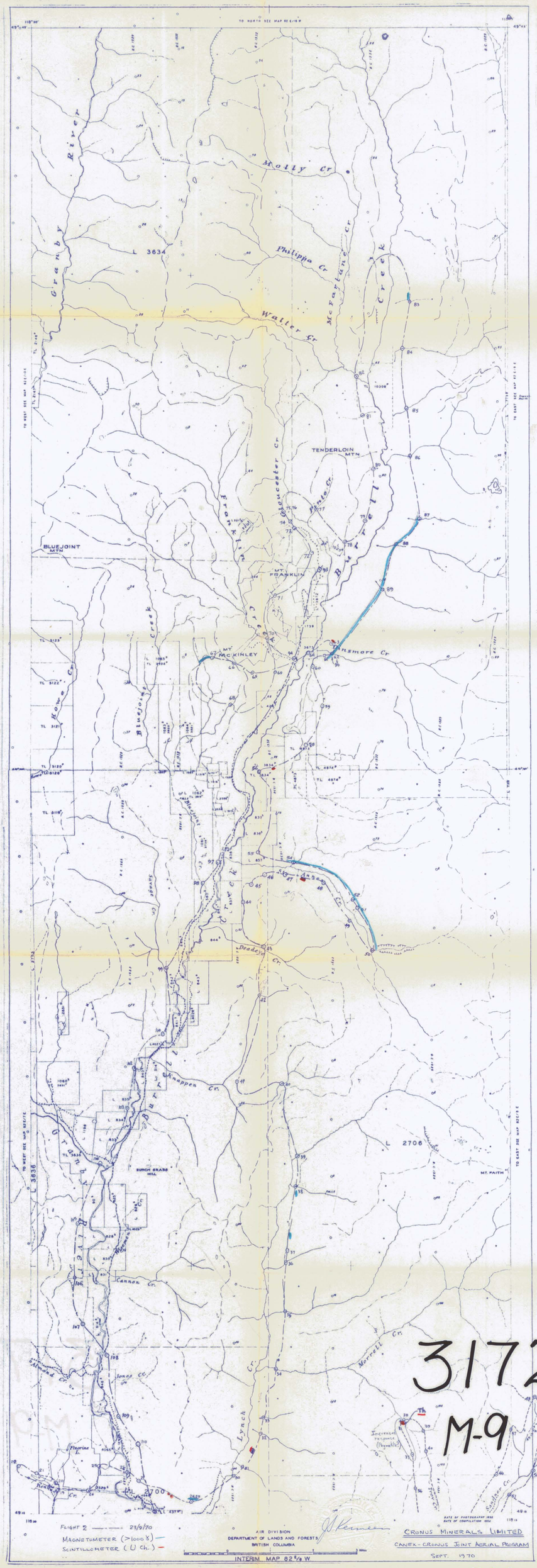
3172 M-8

CR-70-7


TO NORTH SEE MAP 82 E/8 E
118 15'
49 15'
118 00'
49 15'
Kenninger Cr.
MT. GLADSTONE
Hooper Cr.
Paulson
Walhachin Cr.
Oriani Cr.
Stillchiner Cr.
Seal Cr.
Iron Creek
Big Sheep Cr.
L 2698
Kennick Cr.
Texas Creek
Mollie Cr.
Dry Cr.
Jackfish Cr.
Creek
Valley R.
Cowgill Cr.
MT. ST. THOMAS
Texas Pt.
English Pt.
English Cove
Lighthouse Cr.
Lighthouse Pt.
Christina Lake
Lavalley Pt.
Spoonan Cr.
Christina Lake
Chandler Cr.
CASTLE MTN.
APPROX ULTRA BASIC OUTLINE
Trout Cr.
Hunters Cr.
Santa Rosa Cr.
O'Farrell Cr.
Kettle River
Kettle
Billings
Cascade
BRITISH COLUMBIA
U.S.A.
TO WEST SEE MAP 82 E/1 W
TO EAST SEE MAP 82 F/4 W
FLIGHT 3 ------ 23/9/70
Magnetometer (>1000 γ)
Scintillometer (U ch.)
AIR DIVISION
DEPARTMENT OF LANDS AND FORESTS
BRITISH COLUMBIA
INTERIM MAP 82 E/1 E
CRONUS MINERALS LIMITED
CANEX-CRONUS JOINT AERIAL PROGRAM
SEPT. 1970
CR-70-9

3172

M-10



3172

M-9

LEGEND

LOCATION OF MINERALIZED AREA

Up — SYNGENETIC URANINITE IN PEGMATITE

Ua — SECONDARY AUTUNITE IN FRACTURES

Mo — MOLYBDENITE

Cp — CHALCOPYRITE

Py — PYRRHOTITE

----- BUSH ROADS

GROUP "A"

GROUP "B"

GROUP "C"

GRANBY RIVER

VOLCANIC CREEK

TORONTO CREEK

SNOWBALL CREEK

GR CREEK

SAND CREEK

HULL CREEK

CITY OF GRAND FORKS

B.C. HIGHWAY No. 3

KETTLE RIVER

CANADA

UNITED STATES OF AMERICA

118° 30'

49° 00'

M-2

3172

MINERAL PROPERTY OF

CRONUS MINERALS LIMITED

GRAND FORKS, B.C.

SD, SO, FAT, AN, BH, J J, HO, & PBE GROUPS OF MINERAL CLAIMS

CLAIM MAP

J.S. KERMEEN CONSULTING GEOLOGICAL ENGINEER

SCALE: 1 INCH = ½ MILE

DATE: SEPTEMBER 1970

CR-70-1