MAR 19960007: WAUGH LAKE

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19960007

WAUGH LAKE
ASSESSMENT REPORT
PERMIT 9393100018

WAUGH LAKE ASSESSMENT REPORT

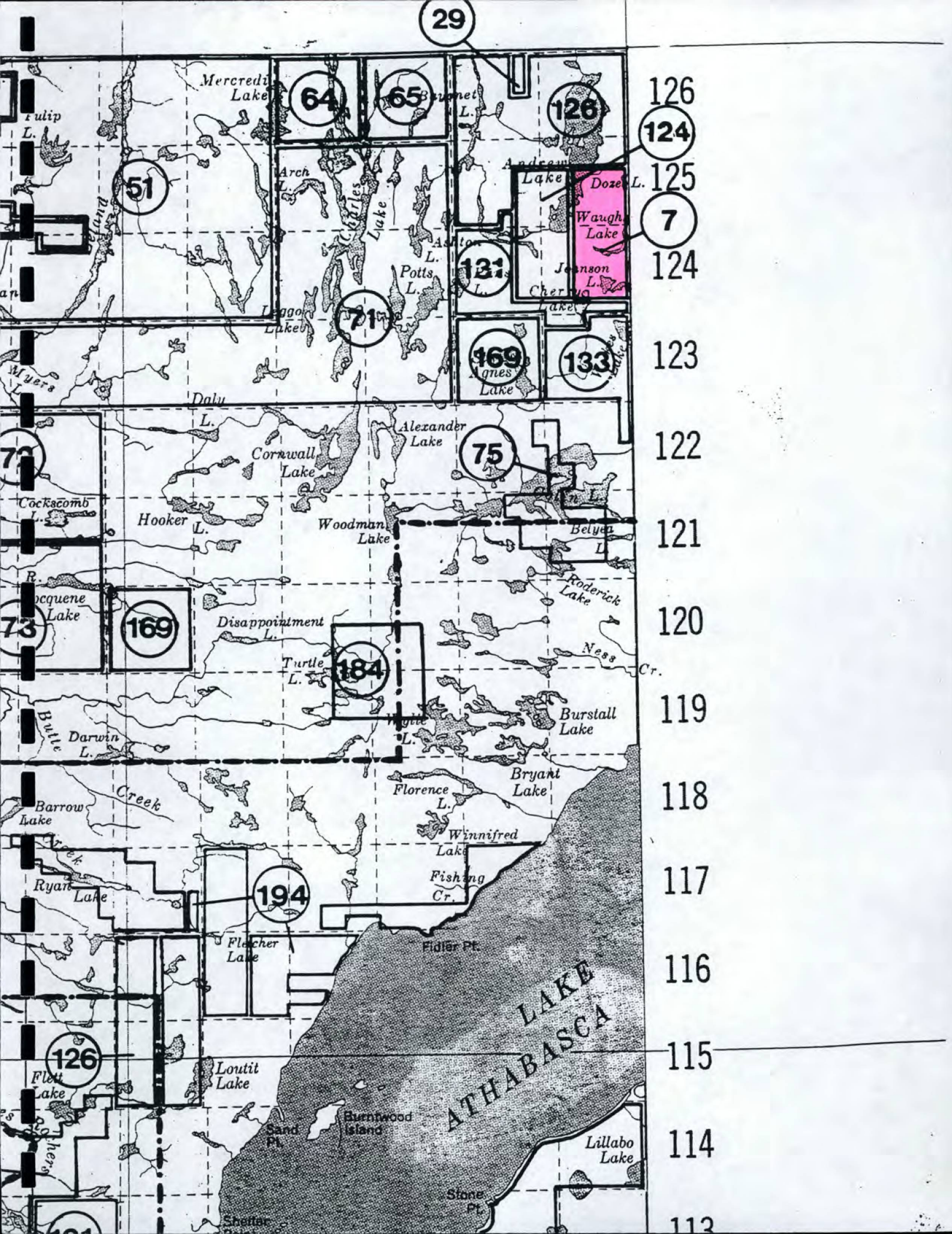
Three major areas have been examined in greatest detail
1. Quartz-tourmaline from south western end of Waugh Lake.
Described in 1994 AGS report as stockwork of quartz-tourmaline veining in rusty metasediments
2. Schist - rusty oxidized dark coloured schist from east side of Waugh Lake.
3. Andrew lake - AB samples are high grade metasedimentary rock picked up at our request by an associate while on a fishing trip to Andrew Lake. The samples were taken near shore and despite the fact that the collector has no geological expertise and was working from a crude sketch map was the largest individual sample of material we had to work with.

Because of the high cost of exploration in this area our group felt that work would be best concentrated on examining selected samples from our area of interest to determine if a viable prospecting target could be found.
Because of previous published work about the area we were interested in the quartz-tourmaline occurrences mapped near Waugh Lake, the rusty metasediments to the east of Waugh Lake and a sample of mineralized schist from the Andrew Lake area.
With the discovery of gold in the quartz-tourmaline system an effort was made in September of 1995 to fly a prospecting team to the Waugh Lake area. Camp supplies were ferried by float plane to the area and stockpiled at a small fly-in fishing camp. Because of weather conditions and other exploration commitments we were unable to complete the work and the supplies were brought back to Edmonton.
Work continues on the samples we have on hand and we will be trying to access samples taken by the Alberta Geological Survey to confirm our findings and expand the data base. The Survey has informed us that they have an extensive collection of thin sections and in view of the data we have collected so far this will be our first approach.

Costs:
10 polished slabs = 150
10 polished slabs microscopic exam - 400
30 polished thin sections - 30 x 25 = 750
Microscopic examination of same - 30 x 60 = 1800
Preparation of selected samples for Microprobe = 400
Microprobe of selected samples - 6 x 150 = 950
Microscopic examination of selected thin sections = 18 x 100 = 1800
Photography of selected thin sections = 500
Chemical treatments of selected mineral grains - 100 (nitric acid digest)
Sodium hydroxide fusion of 30 gram sample - 300 (digest and wash through two micron filter)
Microscopic Evaluation of selected samples for microprobe mineral study - 500
Sample prep of AB samples - from Andrew Lake 10 Kg.

sample acquisition = 300
Thin section 3 X25 = 75
Microscopic exam of AB samples - 3 x 80 = 240
Crush and gravity separate 2 kg. = 250
microscopic examination = 60
acid digest of cons - 30
microscopic exam of residue = 40
sodium hydroxide fusion of 2 kg. = 1000
Fire assay of quartz tourmaline 6 x 15 = 90
fire assay of AB samples - 10 x 15 = 150
Polished thins of GZ - 3 x 25 = 75
Fire assay of GZ- 4 x 15 = 60
Sodium Hydroxide Fusion of GZ = 300
Administration - 1000
Mobilization and de-mobilization of supplies by float plane - $1400
TOTAL = 12720

MAPS OF PROSPECT AREA


29
64
65
126
124
125
7
124
51
121
71
169
133
123
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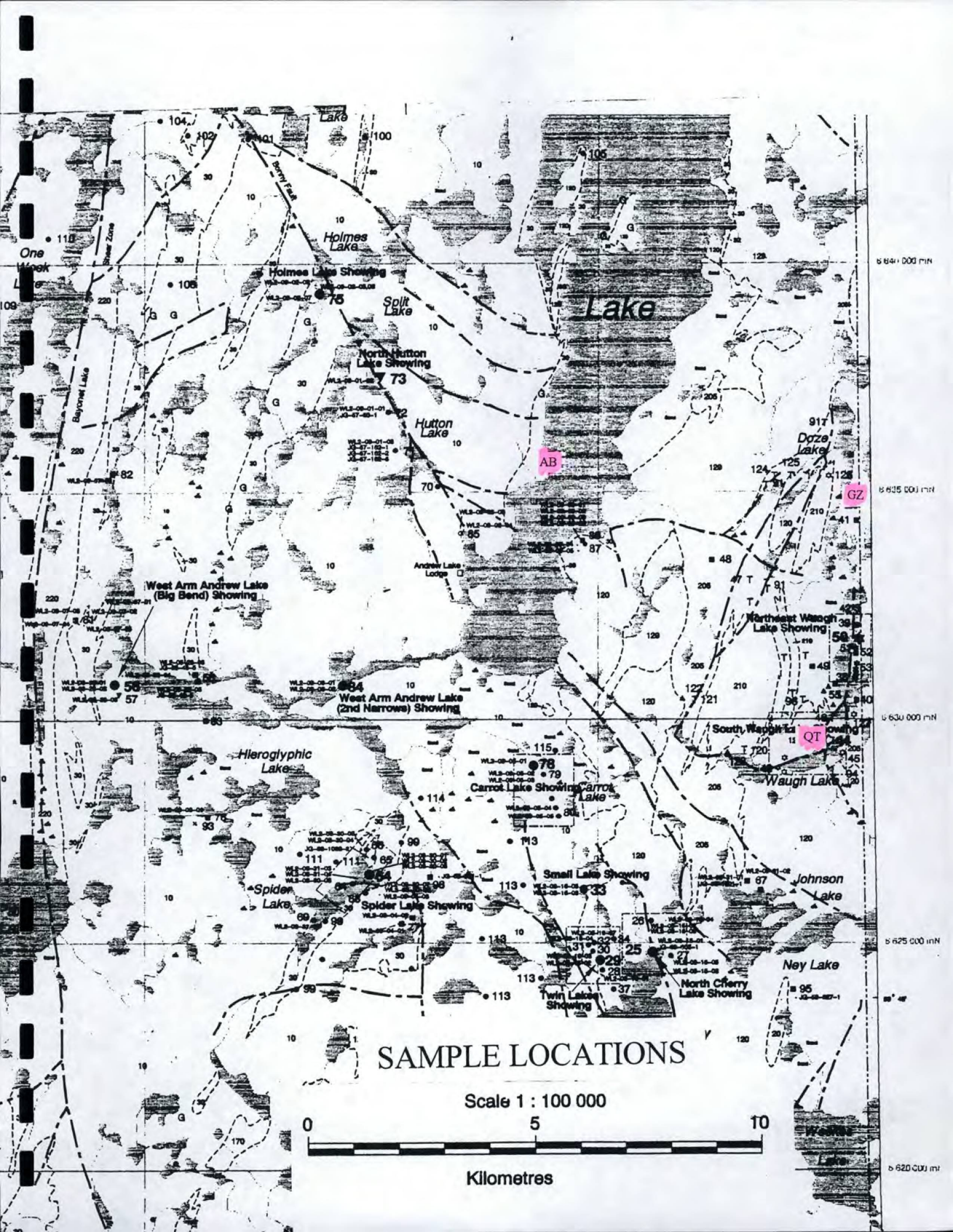
169
184
121
120
119
194
118
117
116
115
114
113
Mercredi Lake
Tulip L.
Arch L.
Charles Lake
Potts L.
Waugh Lake
Doze L.
Johnson L.
Agnes Lake
Daly L.
Alexander Lake
Cornwall Lake
Cockscomb L.
Hooker L.
Woodman Lake
Roderick Lake
Disappointment L.
Turtle L.
Ness Cr.
Burstall Lake
Darwin L.
Bryant Lake
Florence L.
Barrow Lake
Winnifred Lake
Ryan Lake
Fishing Cr.
Fletcher Lake
Fidler Pt.
LAKE ATHABASCA
Loutit Lake
Flett Lake
Burntwood Island
Sand Pt.
Lillabo Lake
Stone Pt.


Holmes Lake Showing
Split Lake
North Hutton Lake Showing
Hutton Lake
Holmes Lake
Lake
AB
Doze Lake
GZ
Andrew Lake Lodge
West Arm Andrew Lake (Big Bend) Showing
West Arm Andrew Lake (2nd Narrows) Showing
Northeast Waugh Lake Showing
South Waugh Lake
QT
Waugh Lake
Hieroglyphic Lake
Carrot Lake Showing
Carrot Lake
Small Lake Showing
Spider Lake
Spider Lake Showing
Johnson Lake
Ney Lake
North Cherry Lake Showing
Twin Lakes Showing
SAMPLE LOCATIONS
Scale 1 : 100 000
0
5
10
Kilometres

QUARTZ-TOURMALINE SAMPLES

These samples are referred to as the QT samples. Four separate locations along a quartz-tourmaline exposure on the south end of Waugh Lake were examined. While numerous thin sections were made it was not until relatively late in this program that gold was identified. This is due to the use of high magnifications by one of our assistants. Dene Tarkyth Bsc Hon. Geology found the gold flakes only after switching to magnifications of over 400 power. To that time the sections had only been examined with a maximum of 200 power.
We still have quite a few thin sections to re-examine.

FIRE ASSAY RESULTS

None of the quartz-tourmaline assays were within our lab's detection limit of .025 oz. per ton. With the visible gold in thin section this was a surprise. Samples have since been submitted for more sensitive analysis and so far no assay has exceeded 160 PPB.

THIN SECTIONS

As can be seen in the photographs of selected thin sections gold occurs as flakes of free gold in quartz, associated with graphite and as inclusions and cores of arsenopyrite and pyrite.
Gold sizes were in the 2 to 20 micron range with most of the gold in the smaller sizes from 2 to 10 micron.
Nitric acid treatment of the surface of selected thin sections was used to expose some gold locked in pyrite and in several cases confirm that the grains seen were in fact noble metal.
Because gold is so much softer than the host rock it has a tendency to suffer abrasion and even destruction during the polishing of the thin section. Several times the people doing the microscopic exam of the thin sections had trouble focusing on suspected gold grains because the polishing action had made the grain concave. At the high magnifications needed to see the gold grains keeping the grain in focus with the limited focal length was next to impossible.
Other grains were obviously scarred by the polishing action. Some grains appeared to have a texture incongruous with gold but further examination confirmed the gold opinion.
Arsenopyrite, chalcopyrite, and iron pyrite were all noted but were not common. Some of them had gold as inclusions.

MICROPROBE OF SELECTED MINERAL GRAINS

Of the microprobe work to date the sections submitted for probe were done before gold was confirmed in thin section. As a result the investigation was not as successful as we had hoped.

With new data available we can now submit further sampling for investigation. Essentially we now know the what we are looking for so investigation should be easier. Our intention will be to probe individual gold grains and the various mineral associations we have observed.
The data we present in this report is merely selected from the overall testing done. No gold was found in our first investigation but we are confident that on re-submission of selected samples the investigation into gold occurrences can proceed.

SODIUM HYDROXIDE FUSION

This process has been borrowed from our diamond exploration work. Samples are rough crushed to pass a ten mesh screen and then fused at a temperature of 600 degrees centigrade. The resulting fusion material is poured into a cast iron mold and allowed to cool. The cooled fusion looks like melted brown sugar and is relatively easy to re-dissolve in hot water. On smaller fusions ultra sonics are used to speed up the process but larger fusions (over 100 grams) are too large to fit in out ultra sonic system. The larger fusions were merely left in a hot water bath overnight.
The solution was then passed through a 100 mesh screen and then a 2 micron filter paper and the materials retained on the screen or paper were microscopically examined. Care must be taken to process the solution hot and to keep sufficient water in the process to keep the salts in solution. If left to cool or if there is insufficient water salts will drop out and will blind the filter. If a salt "sludge" does form more hot water and elevated temperatures will correct the problem.
The quartz-tourmaline sample was quite small - about 30 grams but visible gold was recovered on the filter. These grains are in line for microprobe work.

AB SAMPLES

FIRE ASSAY

Of the ten assay run at our lab one of the AB samples yielded an assay value of .033 and one other was .04. All others were below our detection limit.
A sample of this material has been prepared but has not yet been submitted for more sensitive analysis.

THIN SECTIONS

Three thin sections were prepared of this sample for preliminary investigation. Sulphide minerals were noted but no gold has been seen to date. In the work with the quartz-tourmaline samples we noticed that gold was not evident until very high magnification was used. Out first examination of this sample was done at the 50 and 100 times magnification. They are going to be re-investigated using magnifications in the 400 to 500 times range.
Since we have recovered gold in fire assay there should be gold visible as free or combined grains.

GRAVITY CONCENTRATION

A 2 kg. sample of the rock was crushed to minus 80 mesh. This sample was run on a Wilfley vibratory concentration table.
Cons were then submitted for microscopic examination.
No gold was noted but after looking at the size of the gold that was being seen with the quartz-tourmaline system the material was re-crushed and tabled once more. This second crush was run on material passing a 120 mesh screen. This screen size is still not fine enough in our opinion but this was the finest we could screen to efficiently.
The concentrate from this run was rich in pyrite but no free gold was seen. There was some thought that since gold had been noted in the quartz-tourmaline enclosed in sulphides the sulphides in the gravity con might have similar occurrences.
To see if this might be the case the cons were put through a hot 1 to 7 nitric acid treatment. This material was also bombarded with ultra sonic waves to help speed up the process. It has been out experience that leaching times can be shortened considerably by using ultra sonics. In one case we have seen the time shrink from 10 hours to 1/2 an hour.
After treatment the residues were filtered and dried and then submitted for microscopic examination.
The sulphides were essentially destroyed but no gold was seen.

SODIUM HYDROXIDE FUSION

This test was carried out at the same time as the gravity concentration tests. In retrospect it may have been premature but the equipment was available at that time for our use and expediency was essential.

A two kilogram sample was crushed to minus 10 mesh and then fused at 600 degrees centigrade. The fusion was treated in the same manner as the quartz - tourmaline sample but the size of the sample made for a labor intensive exercise. Fusions of up to one hundred grams of ore have over 300 grams of sodium hydroxide mixed with them. At that volume of fusion our furnace could only handle the crucibles suitable for 100 grams of ore at a time. This meant that the 2 kg. took 20 fusions to complete. The handling of all that fusion mixture was cumbersome. Eventually we simply collected all of the fusions that were poured and broke them down with hot water in a large plastic garbage pail. It was suggested to us that we could probably decant the solution to a great degree without filtration but the possibility that 2 micron gold could stay in suspension lead us to filter all of the solution. The solution was kept hot using a submersible quartz heater. With the scale of filtration equipment we were using it took over 7 hours to filter the entire batch.

Most of the sample had been dissolved and we found two potential flakes of gold retained on the filter. As a yield from two kilograms of material that seemed very low compared to the quartz tourmaline tests.

This would not be an issue if the AB samples assayed lower than the QT samples. However, the QT samples assay much lower despite the gold being more evident under microscopic examination.

GZ SAMPLES

This heavily oxidized black schist from an exposure near Waugh Lake was treated in the same manner as the other samples.

FIRE ASSAY

No gold found at our lab to a detection limit of .025. Samples were reserved for more sensitive analysis and so far one analysis has been completed with a result of 1000 PPB gold.

THIN SECTIONS

The microscopic examination of this material was not revealing until; as with our other samples, we moved to higher magnifications. At that point gold was observed in pyrite. More sections are to be re-examined but so far gold has not been as apparent in this material as in the quartz-tourmaline samples. Once again we are faced with samples with gold values higher than the QT samples yet gold is not as evident under microscopic examination.

SODIUM HYDROXIDE FUSION

No gold was found after fusing 100 grams of this sample

PHOTOGRAPHS OF SELECTED GRAINS FROM MICROSCOPIC EXAMINATION OF SELECTED GRAINS FROM POLISHED THIN SECTIONS

All photos are of polished thin sections in reflected light. Photographs were taken with daylight film so true colour may not be apparent.

A special thanks to Dene Tarkyth Bsc. Hon. Geology who was instrumental in the discovery of the gold grains. It was her determined effort which lead to the re-evaluation of the polished thin sections using much higher magnification than had been used by "experts" to that time. Most gold grains are not readily apparent until magnification exceeds 400 times.

This discovery was made late in our program and with this in mind we will be re-evaluating many more of our polished thin sections.

TABLE OF SAMPLE ANALYSIS

QT SAMPLE SERIES

QT1F	fire assay	Yukon Geotec	<.025 oz. ton AU
QT2F	fire assay	Yukon Geotec	<.025 oz. ton AU
QT3F	fire assay	Yukon Geotec	<.025 oz. ton AU
QT4F	fire assay	Yukon Geotec	<.025 oz. ton AU
QT 5F	fire assay	Yukon Geotec	<.025 oz. ton AU
QT6F	fire assay	Yukon Geotec	<.025 oz. ton AU
QT11N	neutron act.	U of A	55 ppb AU
QT12N	neutron act.	U of A	91 ppb AU
QT13N	neutron act.	U of A	160 ppb AU
QT1	thin section	Tarkyth	400 X mag.
QT2	thin section	Tarkyth	400 X mag.
QT3	thin section	Tarkyth	400 X mag.
QT4	thin section	Tarkyth	400 X mag.
QT1SH	fusion	Yukon Geotec	visible AU

AB SAMPLE SERIES

AB1F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB2F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB3F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB4F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB5F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB6F	fire assay	Yukon Geotec	.033 oz. ton AU
AB7F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB8F	fire assay	Yukon Geotec	<.025 oz.ton AU
AB9F	fire assay	Yukon Geotec	.040 oz. ton AU
AB10F	fire assay	Yukon Geotec	<.025 oz. ton AU
AB1T	thin section	Tarkyth	50X and 100X mag.
AB2T	thin section	Tarkyth	50X and 100X mag.
AB3T	thin section	Tarkyth	50X and 100X mag.
AB1G	gravity con	Yukon Geotec	no visible gold
AB1SH	fusion	Yukon Geotec	two flakes possible gold

GZ SAMPLE SERIES

GZ1F	fire assay	Yukon Geotec	<.025 oz. ton AU
GZ2F	fire assay	Yukon Geotec	<.025 oz. ton AU
GZ3F	fire assay	Yukon Geotec	<.025 oz. ton AU
GZ4F	fire assay	Yukon Geotec	<.025 oz. ton AU
GZ5N	neutron act.	U of A	1000 ppb AU
GZ1T	thin section	Tarkyth	400X mag.
GZ2T	thin section	Tarkyth	400X mag.
GZ3T	thin section	Tarkyth	400X mag
GZ1SH	fusion	Yukon Geotec	no visible AU

FIG. 1
QT-1
2 FLAKES OF GOLD IN QUARTZ

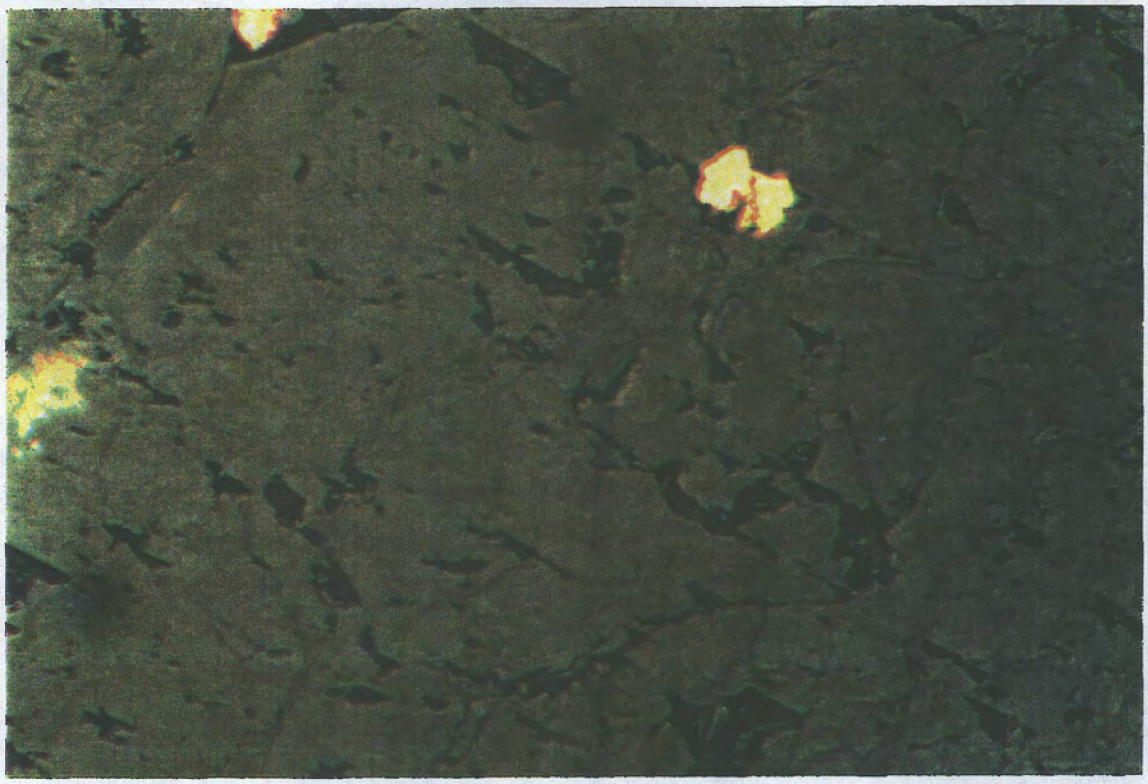


FIG.2
QT-1
GOLD IN QUARTZ ADJACENT TO TOURMALINE

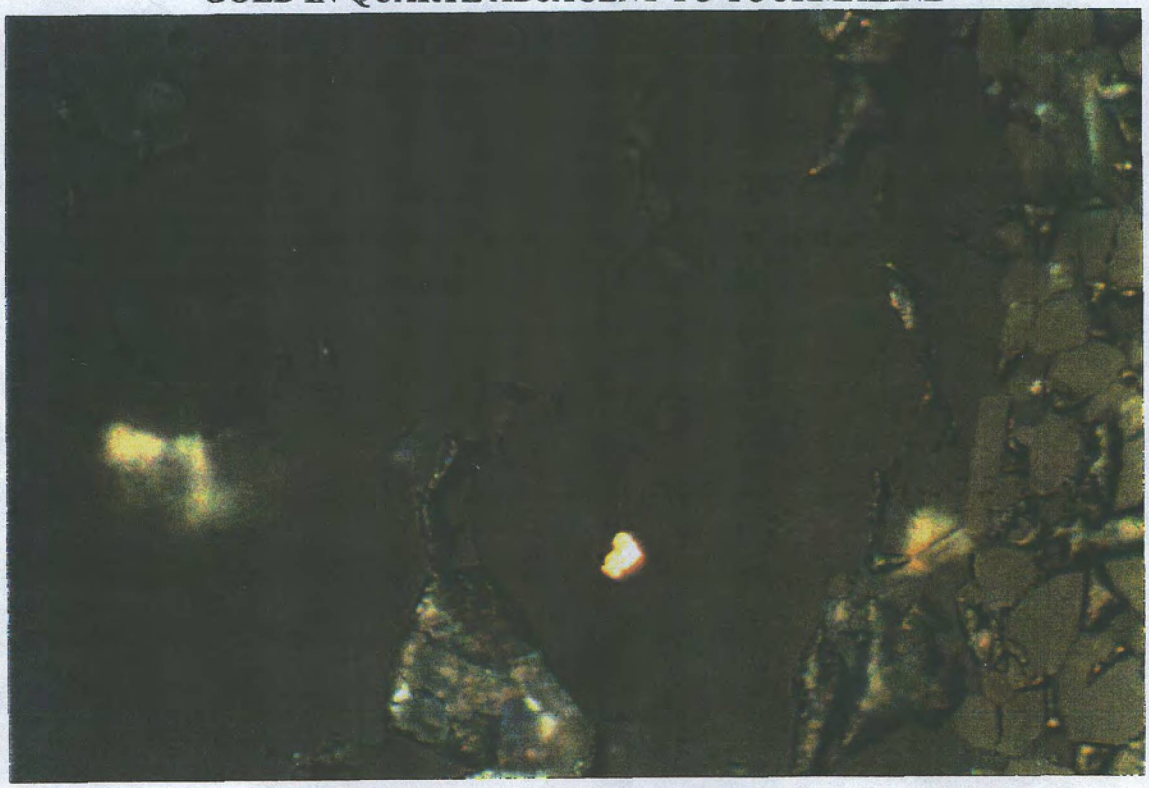


FIG. 3
QT-1
GRAPHITE WITH ASSOCIATED GOLD

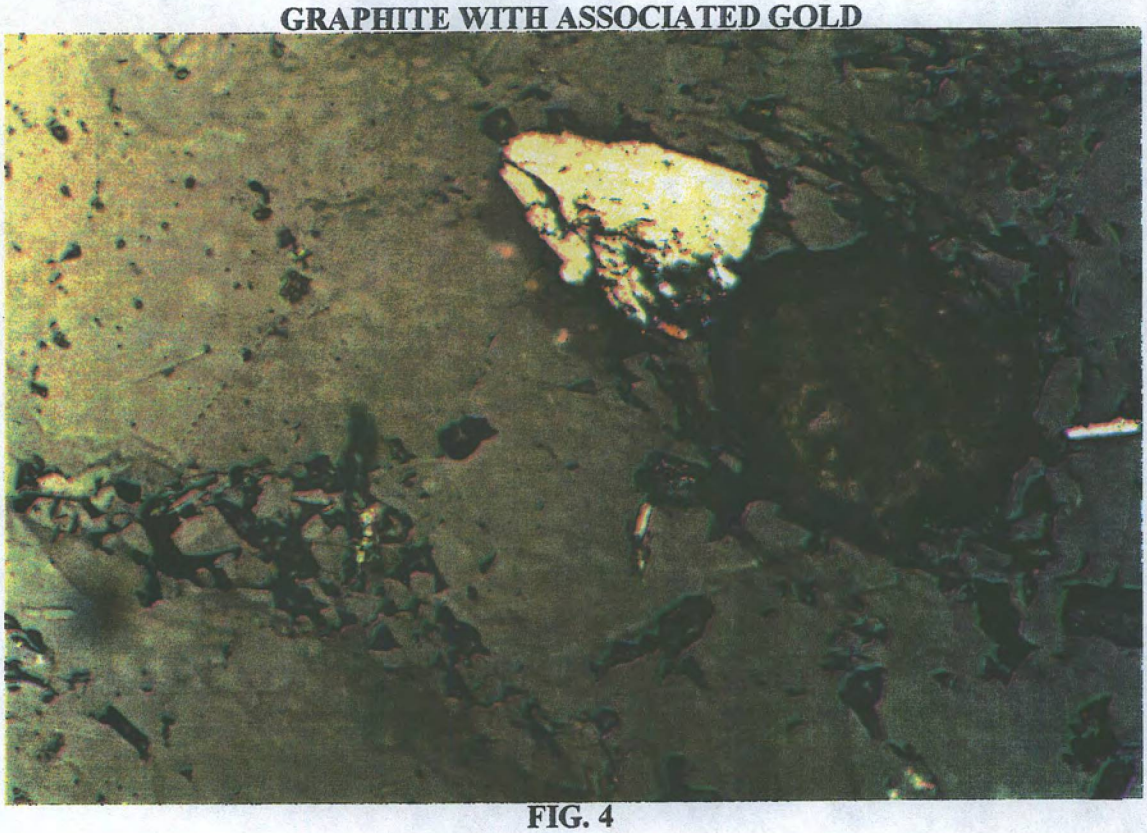


FIG. 4
QT-1
GOLD IN QUARTZ

FIG. 5
QT-1
GOLD IN QUARTZ

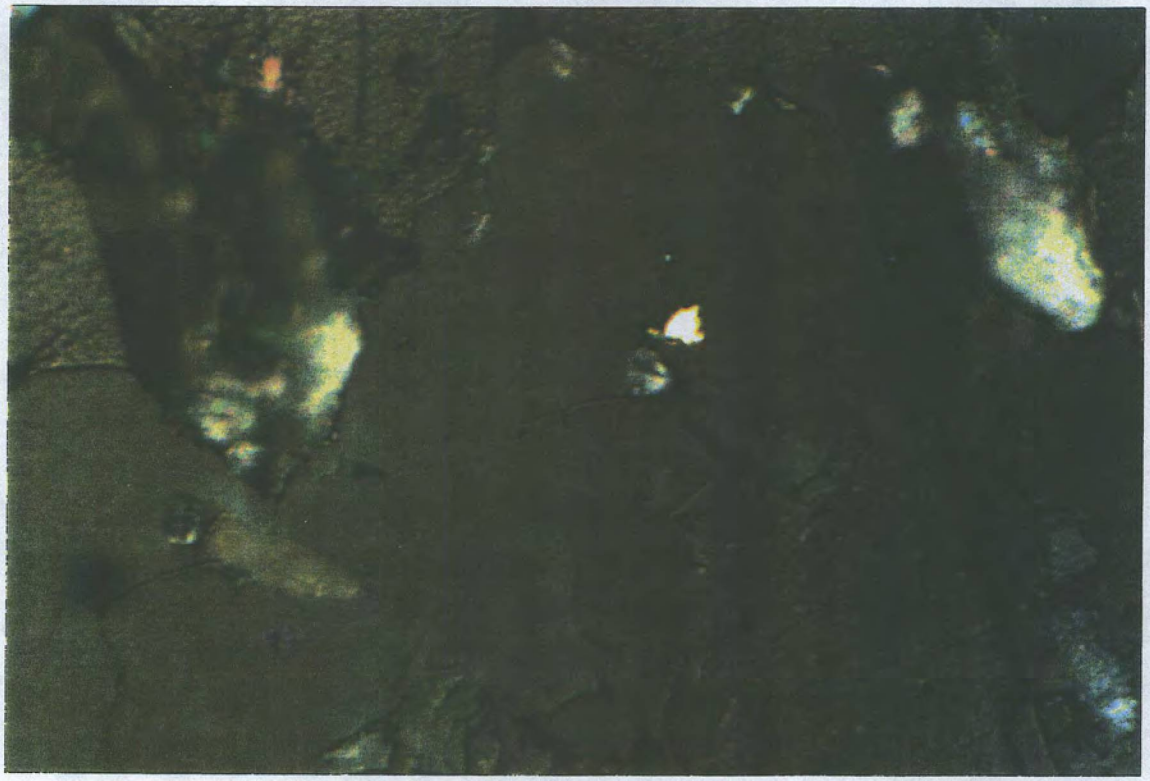


FIG. 6
QT-1
GRAPHITE WITH ASSOCIATED GOLD
ARSENOPYRITE (WHITE REFLECTIVE)
TOURMALINE (LIGHT GREY)

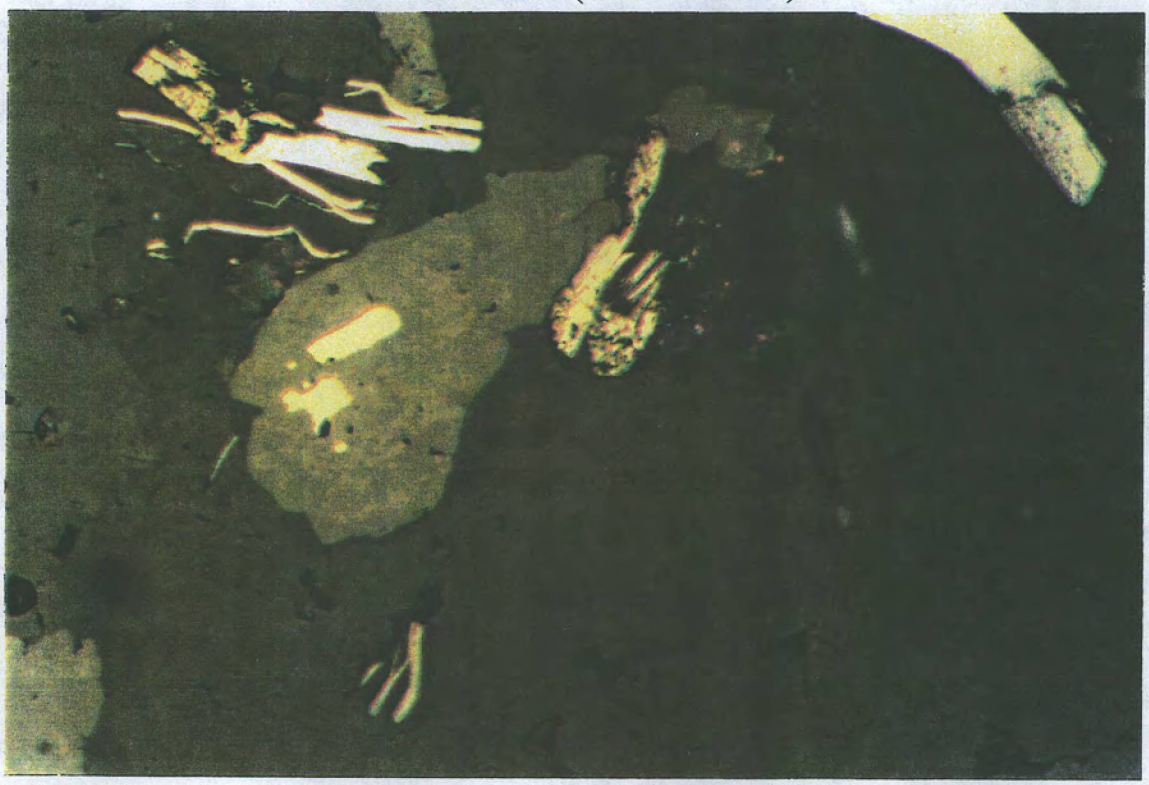


FIG. 7
QT-2
2 MICRON GOLD ASSOCIATED WITH TOURMALINE LAMELLA

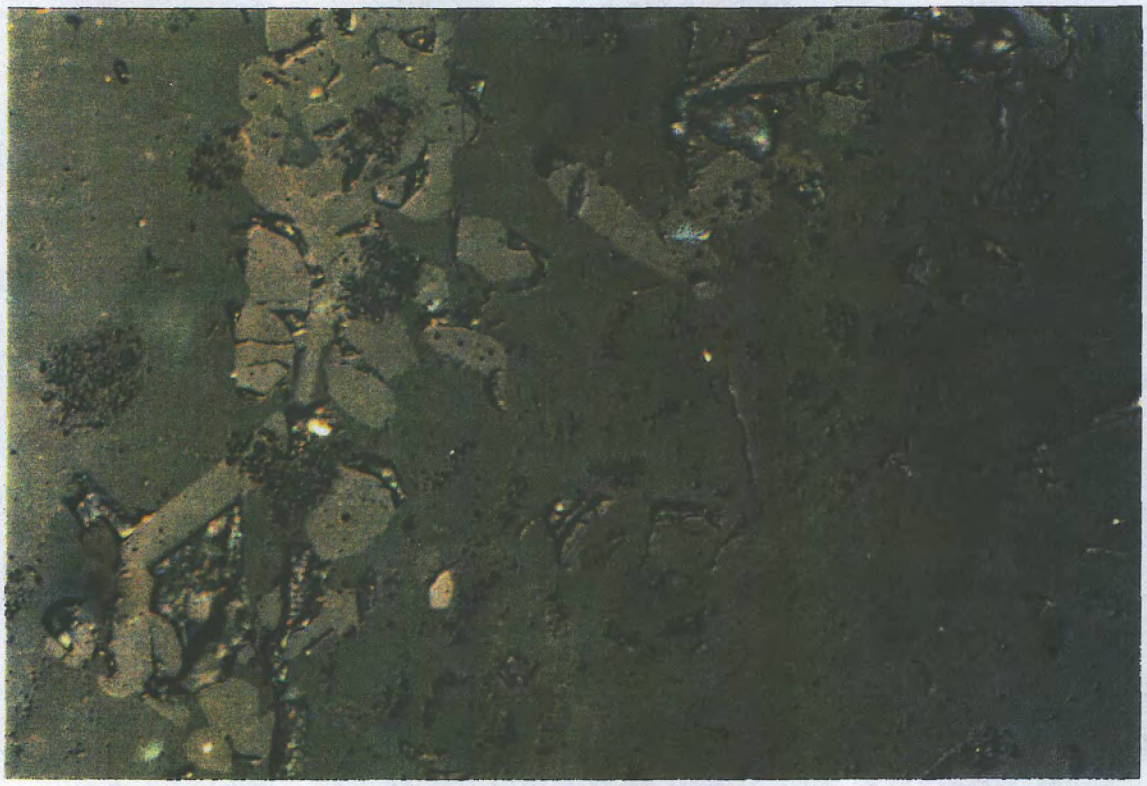


FIG. 8
QT-2
GOLD BETWEEN TOURMALINE GRAINS

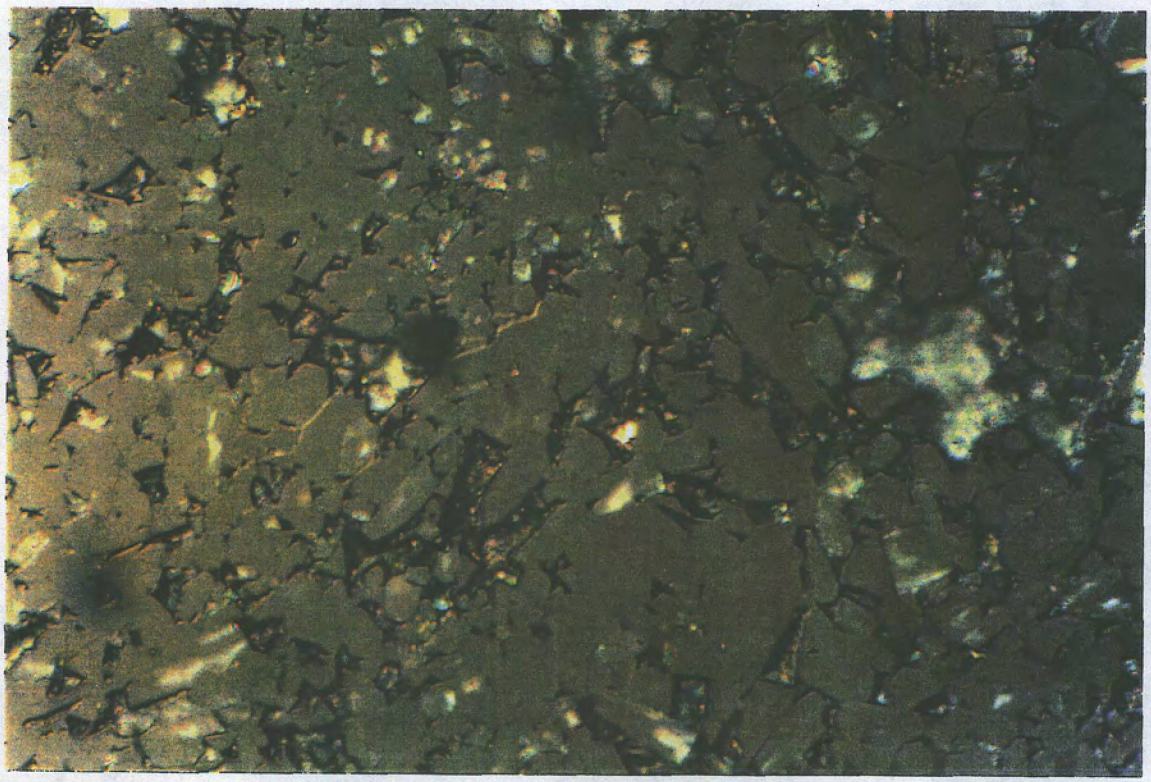


FIG. 9
QT-2
GOLD IN QUARTZ

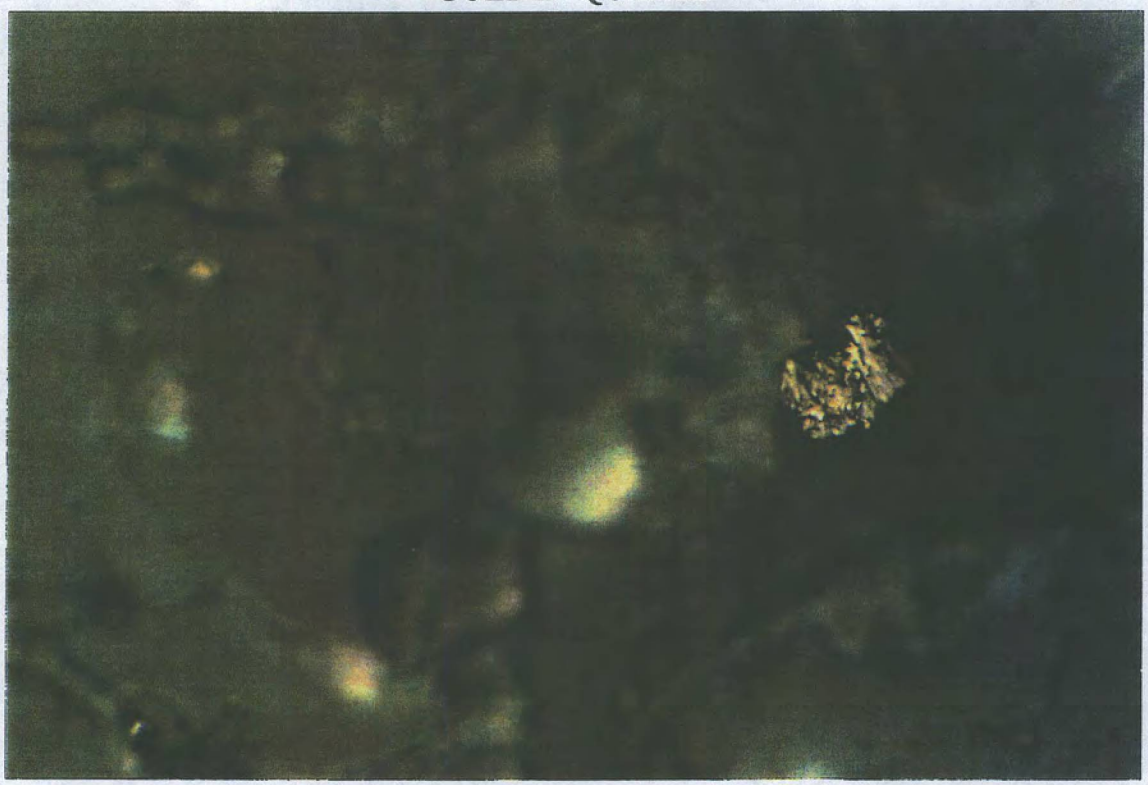


FIG. 10
QT-2
GOLD IN QUARTZ NEXT TO TOURMALINE VEIN

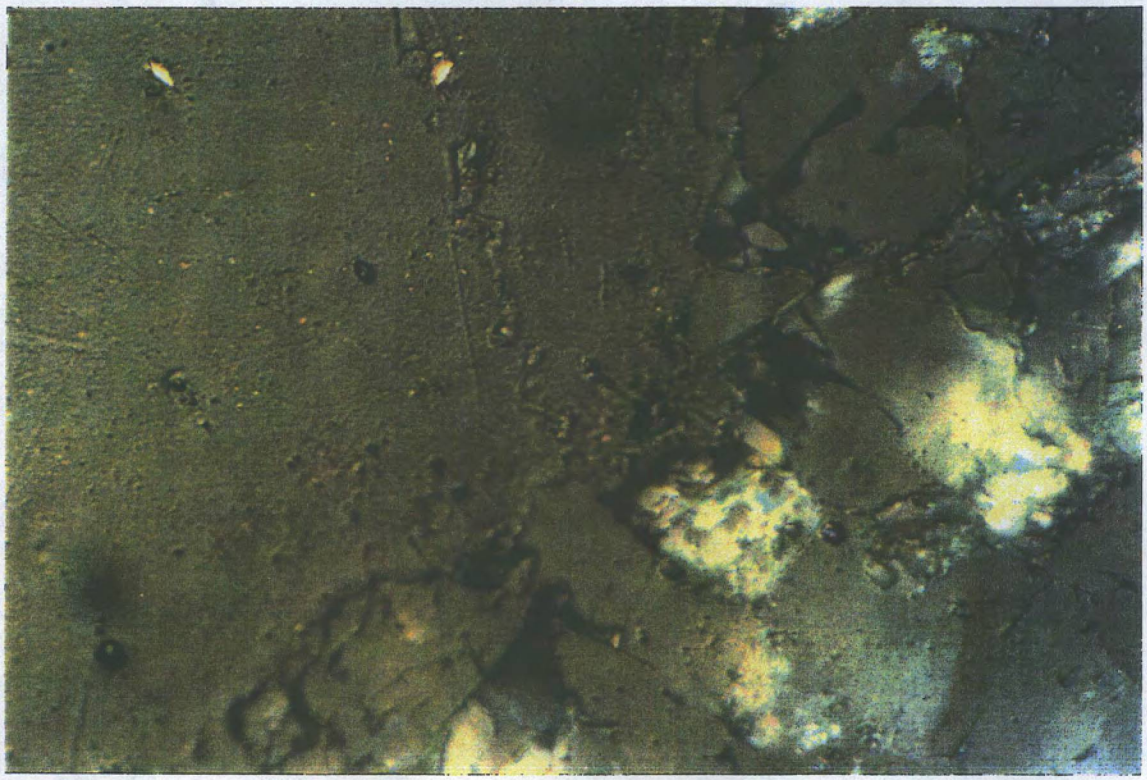


FIG. 11
QT-3
SUB MICRON GOLD IN QUARTZ NEAR TOURMALINE

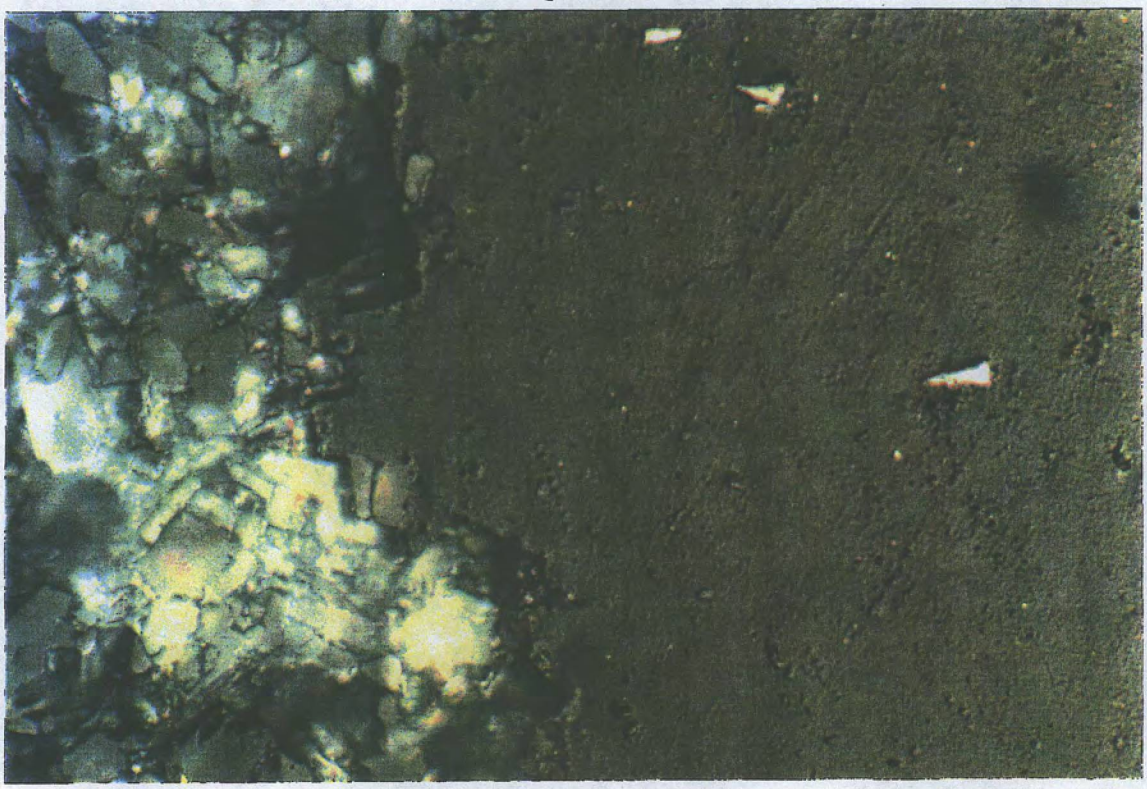


FIG. 12
QT-3
GOLD ABRADED AND PARTIALLY DESTROYED
BY POLISHING

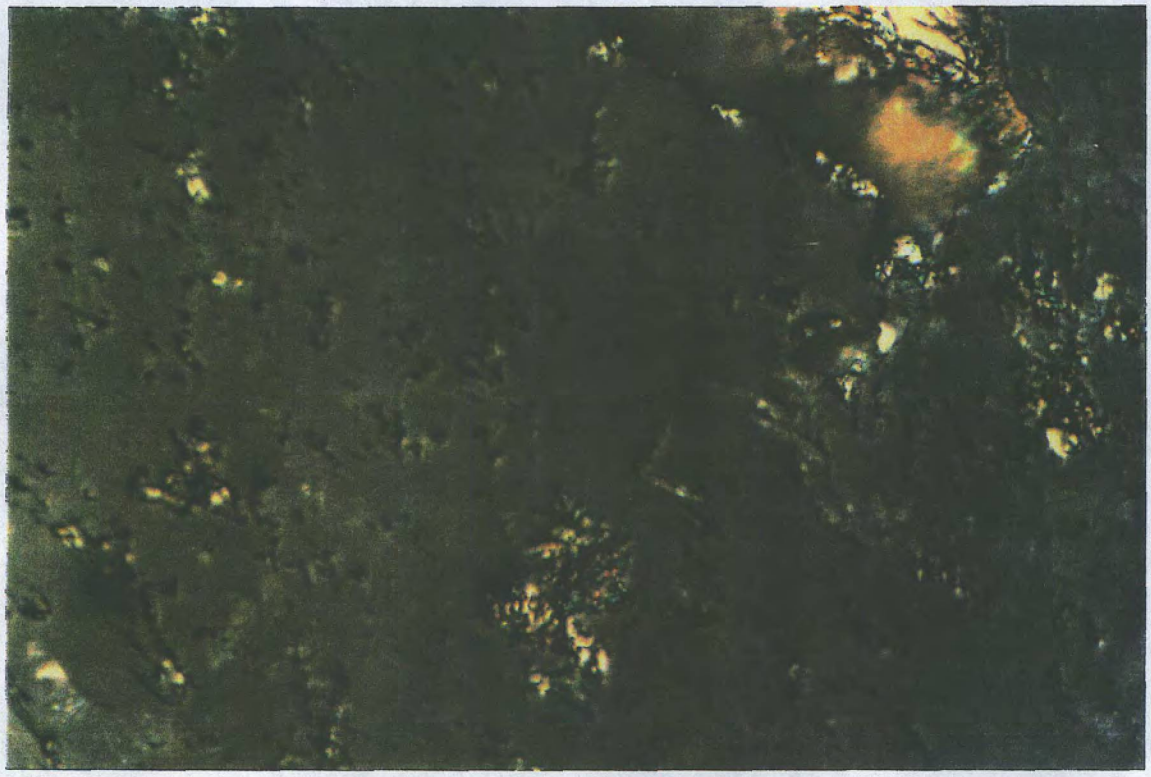


FIG. 13
QT-3
GOLD ABRADED AND PITTED BY POLISHING

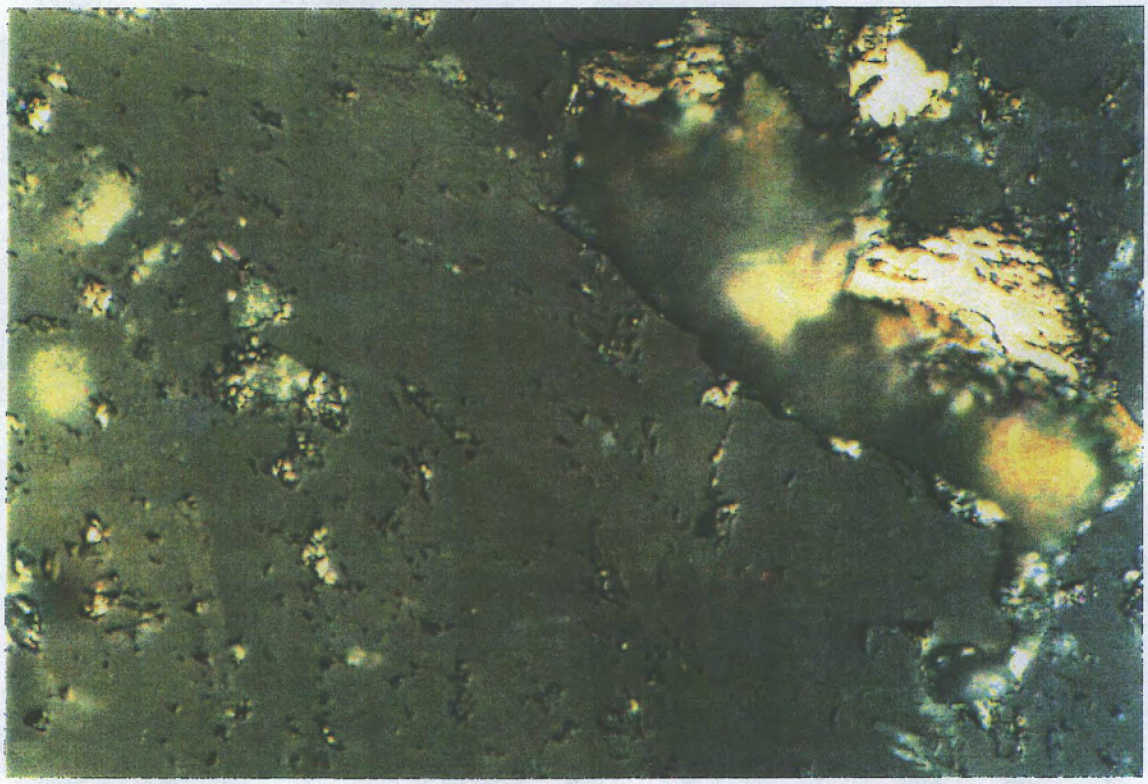


FIG. 14
QT-3
GOLD IN ARSENOPYRITE

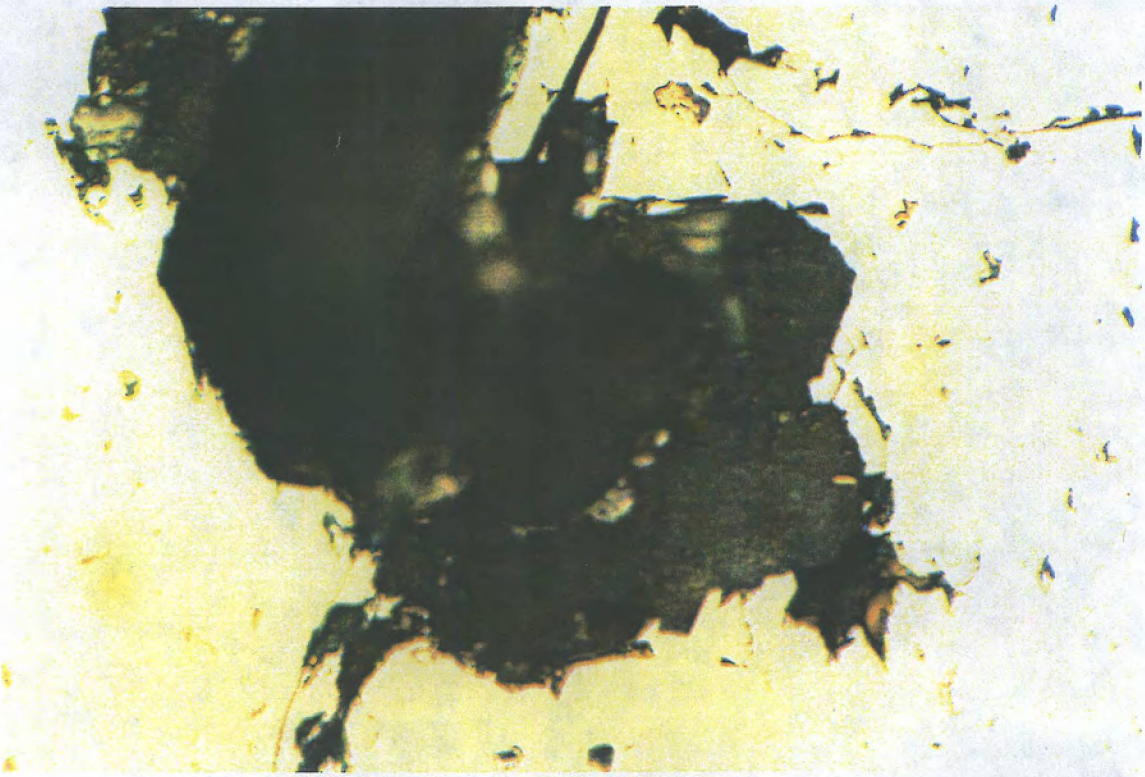


FIG. 15
QT-3
GOLD IN ARSENOPYRITE ADJACENT TO SILICATE ALTERATION

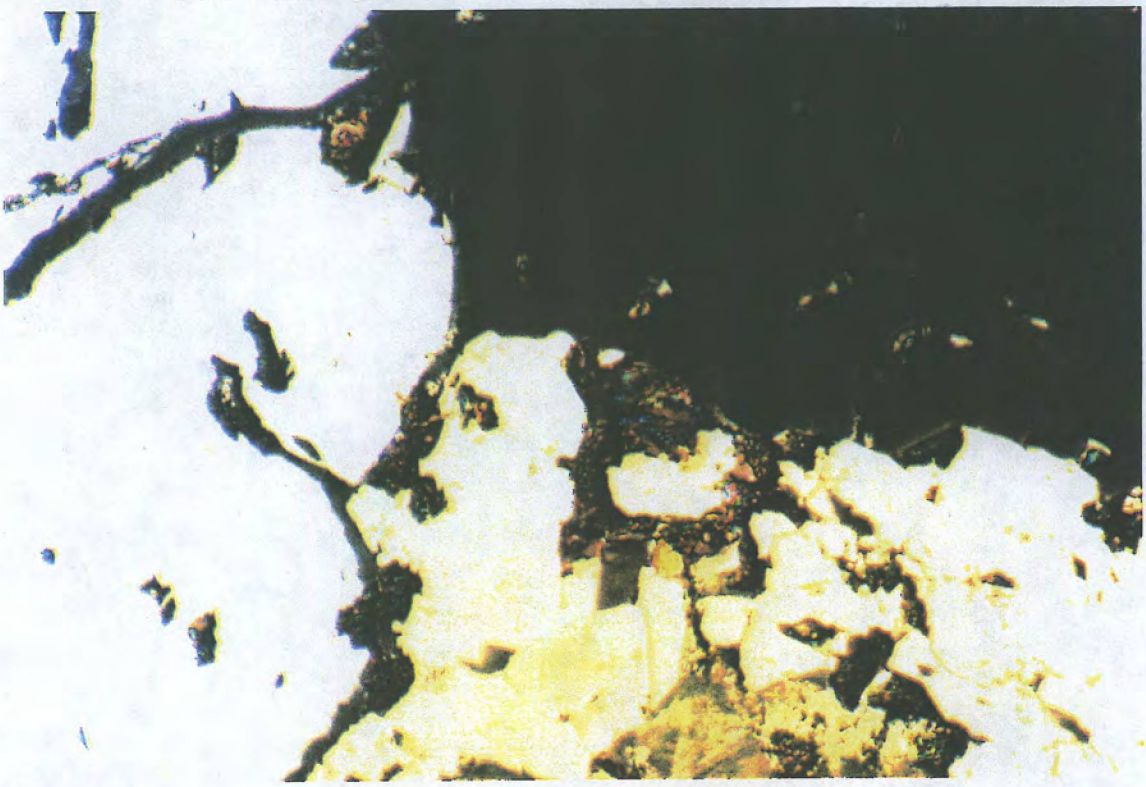


FIG. 16
QT-3
CHALCOPYRITE LATE PHASE REPLACEMENT IN ARSENOPYRITE

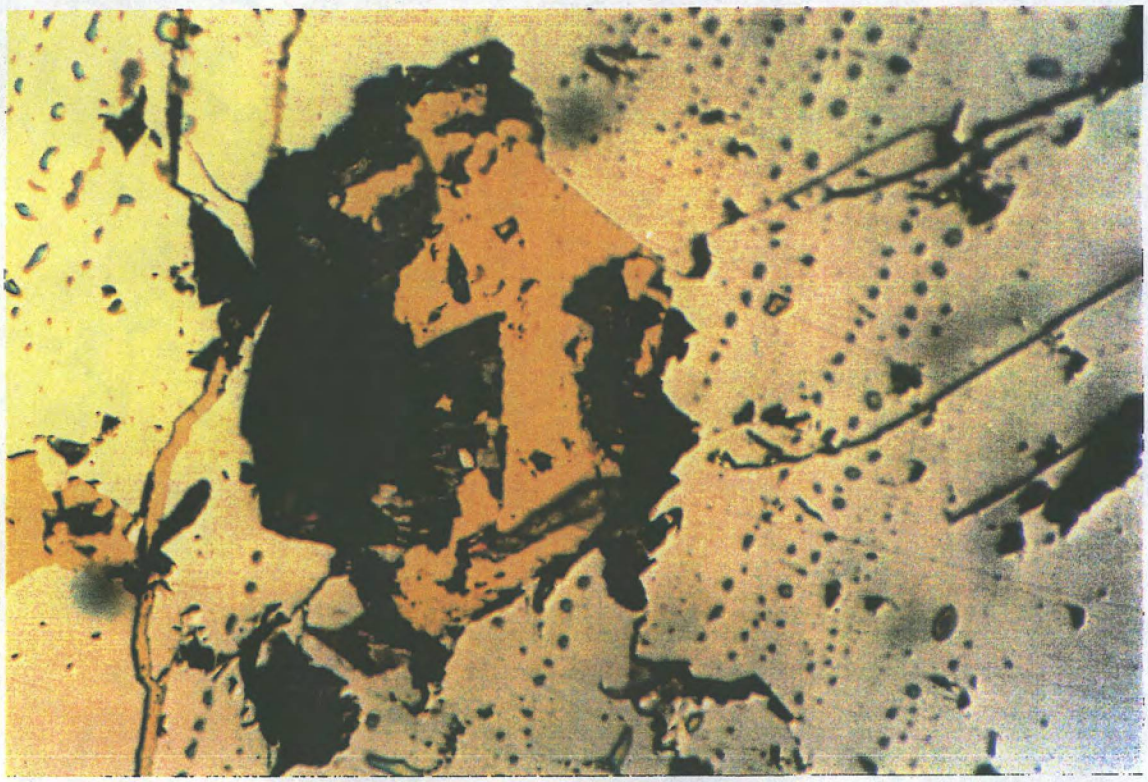


FIG. 17
QT-4
3 MICRON GOLD IN QUARTZ

FIG. 18
QT-4
ARSENOPYRITE GRAINS IN QUARTZ

FIG. 19
QT-4
GOLD IN PYRITE

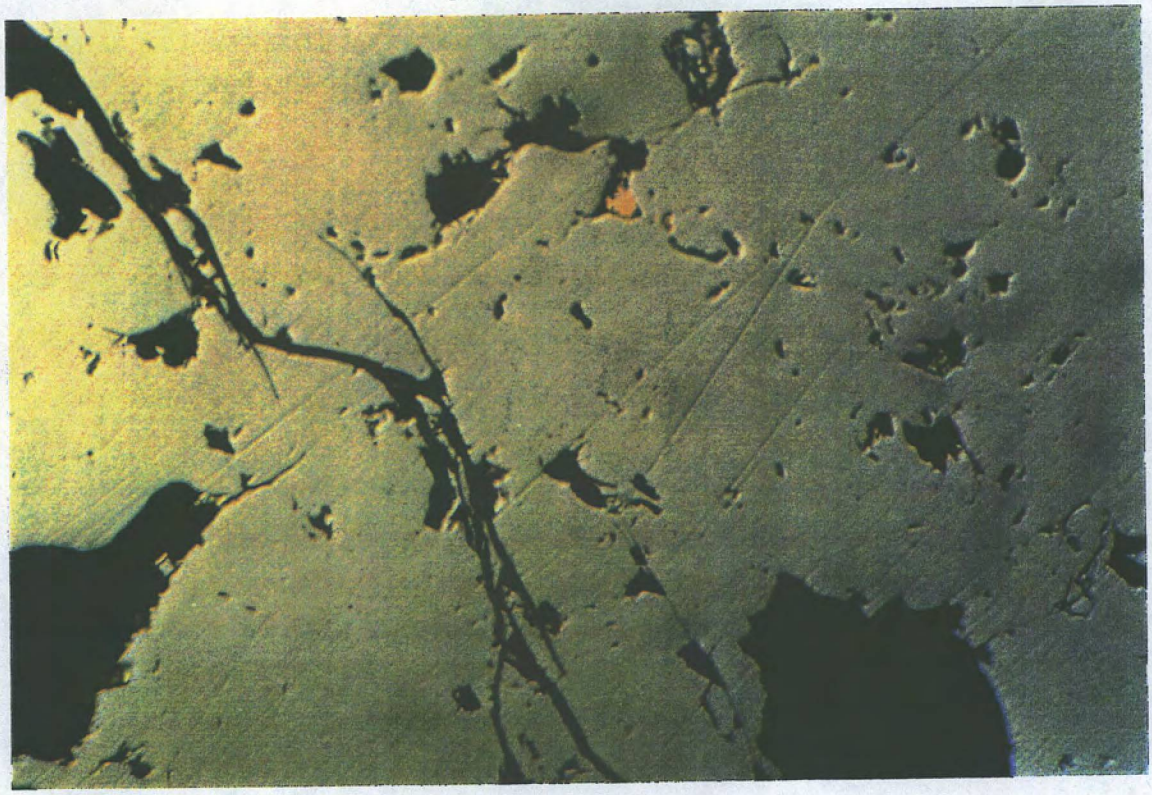


FIG. 20
QT-4
GOLD IN SILICATES

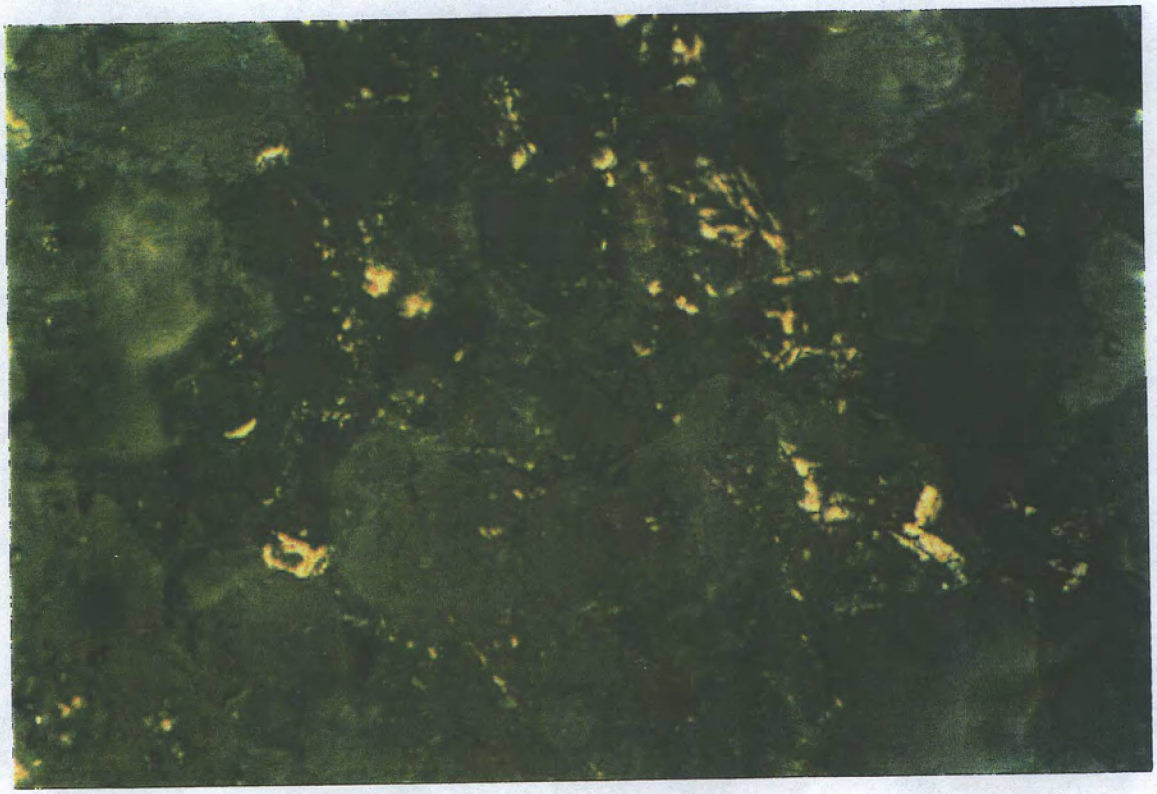


FIG. 21
QT-4
GOLD IN QUARTZ

FIG. 22
QT-4
GOLD IN QUARTZ

FIG. 23
GZ-1
GOLD IN OXIDIZED ZONE OF BLACK SCHIST