FILE COPY

1980 FIELD REPORT

Anise Claim Group

Watson Lake Mining District

Yukon Territory

N.T.S. 105-F-10

Latitude: 61°40'N

Longitude: 132°45'W

By:

L. C. Pigage, PhD.

CYPRUS ANVIL MINING CORPORATION

January, 1981

Field Work done from August 16 - September 17, 1980

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GEOLOGICAL REPORT

ON ANISE CLAIM GROUP

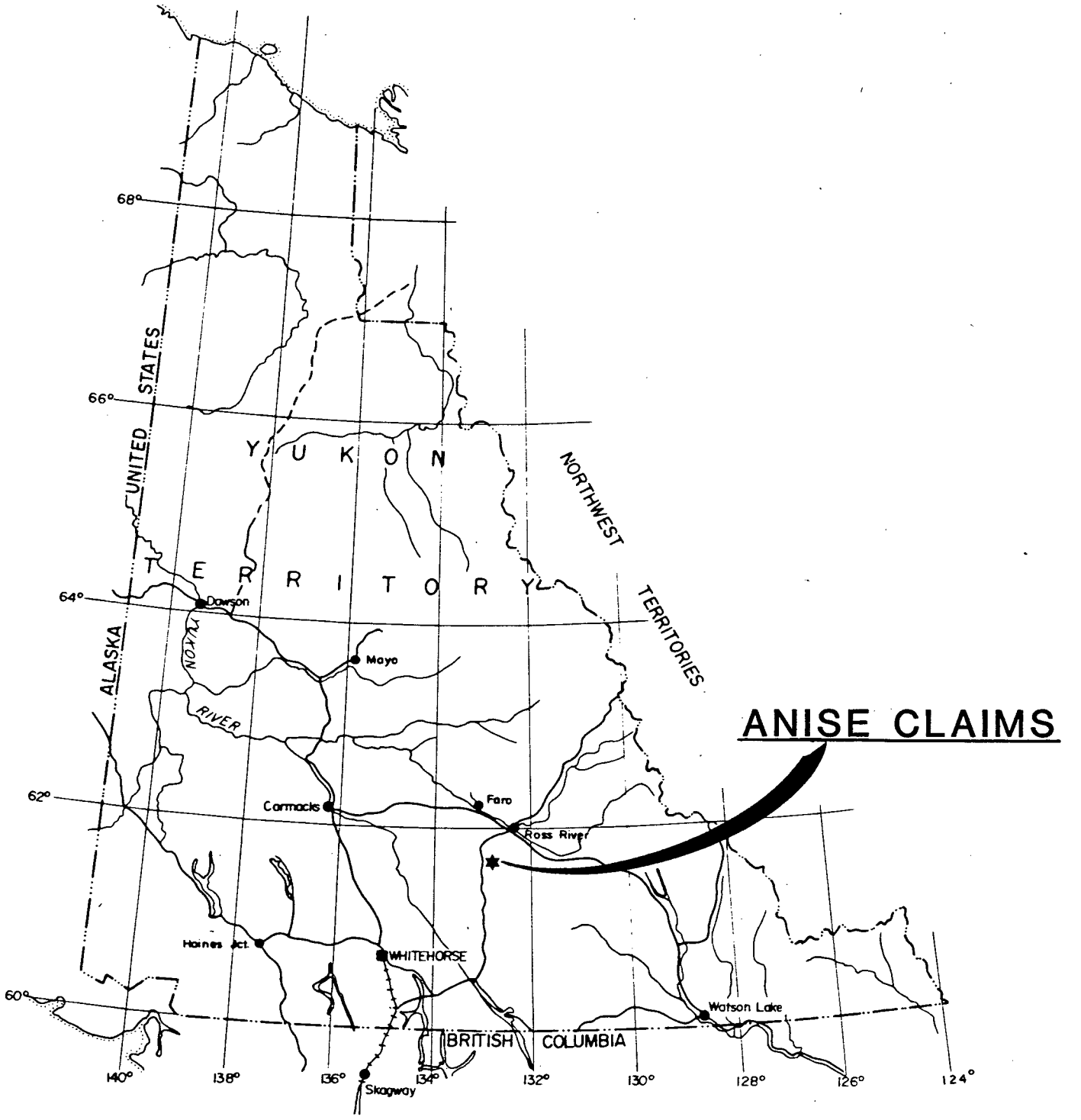
INTRODUCTION

The Anise claim group was staked in 1976 during a regional joint venture prospecting program with Hudson's Bay Oil and Gas. It consists of 64 contiguous claims covering Pb and Zn geochemical anomalies and mineralized float occurrences in Seagull Valley at the south end of Seagull Lakes.

The claims are located in the Pelly Mountains (Figure 1) 45 km (28 miles) southwest of Ross River, Yukon. Access is reasonably accomplished by helicopter or float plane. During the summer months a rough dirt road connecting with the South Canol Road at Groundhog Creek is passable to 4-wheel drive vehicles. Wet weather makes this road impassable for short intervals during the field season.

Soil sampling surveys in 1976 and 1977 outlined several isolated Pb and Zn geochemical anomalies on the property (Dean 1977 a, b). Magnetic and electromagnetic ground surveys were also completed in 1977 (Dean 1977 b). A strong EM conductor was detected on the northeast corner of the property, and a magnetic anomaly was outlined near the centre of the property. EM and magnetic anomalies were not coincident.

Three drillholes were completed during the 1980 field program to test the geochemical and geophysical anomalies for possible massive sulphide deposits. Total depth drilled was 515.1 meters (1,690 feet). Geologic mapping of the property within a regional context was completed concurrently with the



CYPRUS ANVIL MINING CORPORATION

LOCATION MAP

YUKON

SCALE : 1" = 100 MILES

FIGURE 1

drilling program. This report presents the results of the 1980 field program.

GEOLOGY

Much of the Anise claim group is covered by Recent till and alluvium. Extensive outcrop, however, is present on ridges both east and west of Seagull Valley. These exposures complement the geology on the claim group. Figure 2 presents the regional geology of the area, and Figure 3 shows the geology in the immediate vicinity of the geochemical and geophysical survey grid.

Stratigraphy

Lithologic units in Seagull Valley range from late Cambrian to Mississippian in age. Table I presents the regional stratigraphy for the Pelly Mountains. Triassic and Carboniferous units are not present near Seagull Valley. The Road River Formation (OS_{rr}) also has not been recognized in this area.

East of Seagull Valley the Devonian-Mississippian section consists largely of fine-to coarse-grained syenite (My) with a thin veneer of felsic metavolcanics (Mvt) and black to grey phyllites (uDM_s). The syenite is typically sheared and extensively fractured; locally it contains abundant pyrite stringers. Much of the outcrop in Seagull Valley is part of this extensive syenite unit.

West of Seagull Valley, dark grey to black phyllites (uDM_s) constitute most of the Devonian-Mississippian section. Only minor amounts of felsic metavolcanics (Mvt) are present. The phyllites are locally calcareous. A few of the outcrops (stations 1153, 1241) consist of coarse grits and conglomerates containing mainly lithic clasts.

Calcareous phyllites of the Kechika Formation (ϵO_k) are mainly present west of Seagull Valley. These phyllites commonly contain basic dykes/sills, but do not contain the extensive package of flows and breccias found farther east in the Pelly Mountains.

Structure

A major thrust fault has been recognized on ridges both east and west

TABLE I

STRATIGRAPHIC COLUMN

LATE TRIASSIC

uR_1	BUFF TO GREY SILTY LIMESTONES. UNIT OCCURS ONLY IN THE VICINITY OF THE HOWRU CLAIMS.

PALEOZOIC

Pzu	SERPENTINITES, ULTRAMAFICS, CHLORITIC PHYLLITES OF PALEOZOIC (?) AGE.

CARBONIFEROUS (?)

C_{sl}	BUFF TO BROWN SILTSTONE AND SHALE. UNIT OCCURS ONLY IN THE VICINITY OF THE HOWRU CLAIMS.

MISSISSIPPIAN

My	FINE TO COARSE-GRAINED HORNEBLENDE SYENITE.
Mt	TAN TO PALE GREY BEDDED CHERTS. MINOR DARK GREY CHERT, BLACK SHALE AND LIMESTONE.
Mvt	PALE GREY, BROWN OR GREENISH FELSIC TO INTERMEDIATE TUFFS AND LAPILLI TUFFS. COMMONLY WEATHERS BROWN TO ORANGE BECAUSE OF DISSEMINATED PYRITE. MINOR DYKES, SILLS AND FLOWS. THIN INTERBANDS OF CHERT AND BLACK SHALE.

LATE DEVONIAN - MISSISSIPPIAN

'BLACK CLASTIC UNIT'

uDM_s	BLACK SHALE WITH CHERT GRANULE GRIT INTERBANDS. TYPICALLY SHALE CONTAINS THIN INTERBANDS OF MEDIUM GREY, SLIGHTLY PYRITIC SILTSTONE. MINOR INTERCALATED CHERT (MT) AND FELSIC TO INTERMEDIATE TUFFS (MVT).

SILURIAN - DEVONIAN

ASKIN GROUP

SDa	PALE GREY TO BUFF SANDY DOLOMITE TO DOLOMITIC OR CALCAREOUS ORTHOQUARTZITE. MINOR INTERBANDS OF DARK BROWN TO BLACK SHALE.

ORDOVICIAN - SILURIAN

ROAD RIVER FORMATION

OS_{rr}	BROWN TO BLACK SILTSTONE AND SHALE. LOCALLY UNIT IS SLIGHTLY TO MODERATELY CALCAREOUS. TYPICALLY PYRITIC.

LATE CAMBRIAN - ORDOVICIAN

KECHIKA FORMATION - VOLCANICS

$€O_{kv}$	FOLIATED BASIC TO INTERMEDIATE VOLCANIC FLOWS AND TUFFS WITH MINOR INTERCALATED CALCAREOUS, SILVERY PHYLLITES. SOME FLOWS ARE HIGHLY AMYGDALOIDAL.

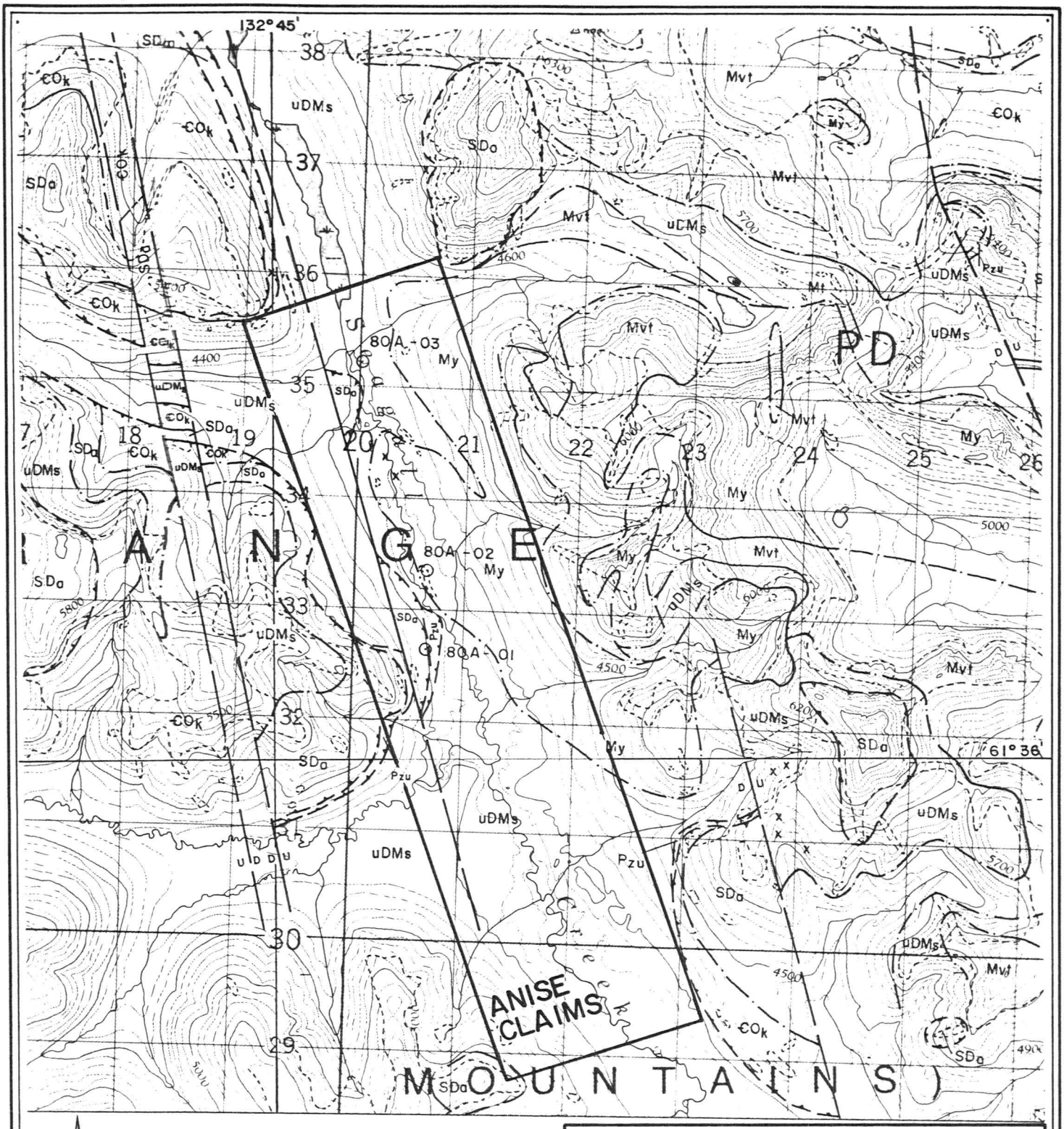
KECHIKA FORMATION

$€O_k$	CALCAREOUS PHYLLITE AND SILTY LIMESTONE WITH MINOR BASIC TO INTERMEDIATE VOLCANIC FLOWS AND TUFFS. UNIT TYPICALLY WEATHERS TO A BUFF OR SILVERY COLOUR.

TABLE I (CONT.)

HADRYNIAN - CAMBRIAN

	ATAN GROUP
$H\epsilon_a$	INTERLAYERED LIMESTONE, DOLOMITE, ORTHOQUARTZITE, AND PHYLLITE. NOT MAPPED IN DETAIL.



Scale 1:50,000 Échelle

Miles 1 0 1

Metres 1000 0 1000

CYPRUS ANVIL MINING CORPORATION	
ANISE CLAIMS	
WATSON LAKE M.D.- Y.T.	
REGIONAL GEOLOGY	
NTS: 105-F-10 SURVEY BY: LCP DRAWN BY: rwr	DATE: MAY 1981 FIGURE 2

of Seagull Valley. The thrust places Silurian-Devonian Askin Group quartzites and dolomites (SDa) over Devonian-Mississippian black phyllites (uDM_s) and felsic metavolcanics (Mvt).

Locally this thrust fault is imbricate and contains a thin wedge of basic volcanics and ultramafics (Pzu) beneath the overlying Askin Group (SDa). This unit rarely exceeds 30 meters in thickness. It is commonly partially to totally altered to serpentinite and may contain small massive magnetite-pyrite aggregates.

Three phases of deformation have been recognized using minor structures. The pervasive S_1 schistosity is correlated with the earliest deformation D_1. No major D_1 folds were recognized from the map pattern. At station 1200 the thrust fault surface is axial planar to an isoclinal recumbent D_1 minor fold. This implies that thrusting was synchronous with or later than D_1 deformation and was related to tightening of D_1 folds. Mississippian syenite (My) locally contains the S_1 foliation.

D_2 deformation is correlated with a locally developed S_2 crenulation cleavage. D_2 minor folds are tight to open; the S_2 crenulation cleavage is axial planar to the minor folds. S_2 cleavage strikes west and dips gently to the north.

East of Seagull Lake the S_2 crenulation cleavage is itself deformed into an open D_3 fold with south vergence. Locally these D_3 minor folds are accompanied by an axial planar S_3 crenulation cleavage. S_3 cleavage is most extensively developed in the region immediately east of Seagull Lake. The cleavage trends west and dips steeply to the north.

D_1 deformation is restricted to post-Mississippian time because the S_1 foliation is locally present in the syenites (My). Thrust faults involve Triassic units and are cut by Late Cretaceous intrusions (Mortensen 1979). Since thrusting appears to be related to D_1 deformation, it is reasonable to assume that the D_1 deformation is restricted to the time interval between Late Triassic and Late Cretaceous.

No time restrictions can be readily applied to the D_2 and D_3 deformations. D_2 post-dates thrusting because it folds the thrust surface (Mortensen 1979). Relation of the Late Cretaceous intrusions to the D_2 and D_3 deformations is unknown.

The latest structural event recognized in Seagull Valley consists of normal faulting along north-trending subvertical faults. Apparent displacement on these faults is generally east-side down although one fault east of the Anise claims has the opposite sense of movement. On the west margin of the claims, one of these faults causes a repetition of the thrust plate sequence in Seagull Valley. Near DDH 80-A-01 the calculated displacement on this fault is 170 meters (550 feet) (assuming a vertical fault surface with only dip slip movement).

1980 DRILL RESULTS

The three holes completed during the 1980 season were located to test the geochemical and geophysical anomalies on the claim group. Summary logs for the DDH are contained in Tables 2 - 4. Detailed lithologic logs are presented in the appendix. Core from the drillholes is stored at Grum Camp near Faro, Yukon.

80-A-01

DDH 80-A-01 was located in the area of a geochemical anomaly on the south part of the claim group. Total depth drilled was 205.1 meters (673 feet).

The drillhole was collared in quartzites of the Askin Group (SDa). With increasing depth the DDH intersected a brief interval of serpentinites and metabasites (Pzu) before drilling through an extended interval of calcareous grey to black, banded phyllites (uDM_s). Only minor metavolcanics were interbanded with the phyllites. The sequence of lithologies indicates that DDH 80-A-01 was collared above the thrust fault and drilled through the zone of imbricate thrusting into the underlying uDM_s phyllites.

Lithologies intersected in DDH 80-A-01 do not account for the surface geochemical anomalies. The isolated Pb/Zn anomalies on the west side

CYPRUS ANVIL MINING CORPORATION

DIAMOND DRILL CORE LOG

Hole Number: 80-A-01

Fabric Orientation Diagram:

Project: Pelmac

Location: Anise Claims

Claim: Anise 24

Terr. Plane Co-ords.: 61°37'N Latitude N

132°43'W Longitude E

Grid Co-ords.: Line 104, +28W

Inclination: -90°

All symmetry determinations looking _____ with _____ dipping _____ with dip azimuth _____.

Elevation: 4000 feet

Total Depth: 676 feet (205.1 m)

Purpose: To test geochemical anomaly.

Logged by: L. Pigage and J. Mortensen

Date(s) Logged: August 30 - September 7, 1980

Drilling Contractor: Arctic

Core:

Size	From	To	
BQ	20	676	(feet)

Collar Cased and Capped: _____

Started: August 27/80

Completed: August 30/80

SUMMARY LOG

DDH 80-A-01

1.	0.0 - 7.5	Triconed in overburden - no core.
2.	7.5 - 11.5	Pale grey to medium grey, slightly calcareous quartzite. Locally contains thin interbands of carbonaceous phyllite. Irregular blebs of pyrite and pyrrhotite.
3.	11.5 - 33.1	Highly magnetiferous serpentinite and metabasite. Locally calcareous. Irregular zones, bands, and stringers of pyrite.
4.	33.1 - 39.7	Massive quartz with abundant pyrite and marcasite.
5.	39.7 - 72.2	Pale grey to grey-green muscovite-chlorite-quartz-feldspar phyllite. Noncalcareous although carbonate occurs in minor amounts as narrow stringers. Traces of biotite present locally.
6.	72.2 - 100.3	Thinly banded grey to dark grey carbonaceous, noncalcareous phyllite. Contains abundant thin grey siltstone bands. Siltstone is commonly slightly calcareous and contains minor disseminated pyrite.
7.	100.3 - 152.8	Laminated, calcareous, pale to dark grey phyllite. Locally contains abundant quartz veining. Pyrite occurs both as disseminated grains and narrow, discontinuous bands and stringers.
8.	152.8 - 174.1	Pale to dark grey phyllite. Locally calcareous. Locally highly brecciated with quartz-carbonate forming matrix in breccia. Some intervals contain abundant pyrrhotite and pyrite in the breccia matrix.
9.	174.1 - 205.1	Thinly laminated, grey to dark grey, calcareous phyllite. Rare interbands of calcareous, biotitic, pale brown metatuff (?) with blebs of pyrite and pyrrhotite.
	205.1	END OF HOLE

of Seagull Valley were previously correlated with scattered occurrences of small fractures filled with galena and sphalerite in the dolomites and quartzites of the Askin Group (Dean 1977 a). Small galena-filled fractures were also noted in Seagull Valley (stations 1139 and 1155) during the 1980 field mapping. It appears that most of the geochemical anomalies could be correlated with scattered occurrences of small fractures filled with galena and sphalerite.

80-A-02

DDH 80-A-02 was collared over a strong magnetic anomaly. The total depth drilled was 160.6 meters (527 feet) with the entire interval consisting of coarse-grained intrusives.

The uppermost 63 meters of the DDH intersected cream to grey syenite. The syenite is extensively fractured and altered with locally developed gouge zones. The first 21 meters of this syenite is extremely pyritic with a ubiquitous network of stringer pyrite. Minor pyrrhotite and arsenopyrite are associated with the pyrite.

Below the syenite the DDH intersected an interbanded sequence of pale to dark green monzonites to diorites. Mafic minerals are hornblende and/or biotite.

The strong magnetic anomaly appears to be caused by pyrrhotite associated with the pyrite stringers in the uppermost syenite. The pyritic syenite appears to be a marginal zone of the syenite intrusion. The magnetic anomaly, therefore, delineates the intrusive contact of the syenite with overlying metasediments.

80-A-03

DDH 80-A-03 was collared over coincident geochemical and EM anomalies. The DDH was completed to a depth of 149.4 meters (490 feet).

The only unit intersected in the DDH was the Devonian-Mississippian "Black Clastic Unit" (uDM_s). The upper part of the DDH consisted of interbanded calcareous and noncalcareous, slightly pyritic, black phyllites.

CYPRUS ANVIL MINING CORPORATION

DIAMOND DRILL CORE LOG

Hole Number: 80-A-02

Fabric Orientation Diagram:

Project: Pelmac

Location: Anise Claims

Claim: Anise 20

Terr. Plane Co-ords.: 61°37'N Latitude N

132°43'W Longitude E

Grid Co-ords.: L 80, 24 + 50 W

Inclination: -90°

All symmetry determinations looking _____ with _____ dipping _____ with dip azimuth _____.

Elevation: 3850 feet

Total Depth: 527 feet (160.6 m)

Purpose: To test magnetic anomaly.

Logged by: L. Pigage and J. Mortensen

Date(s) Logged: Sept. 4 - Sept. 6, 1980

Drilling Contractor: Arctic

Core:

Size	From	To
BQ	19	527 feet

Collar Cased and Capped: _____

Started: Sept. 2, 1980

Completed: Sept. 5, 1980

SUMMARY LOG

DDH 80-A-02

1.	0.0 - 5.8	Triconed in overburden - no core.
2.	5.8 - 21.4	Massive, coarse-grained cream to pale grey, altered syenite. Locally syenite is pale green due to extensive chloritization. Entire unit is extensively cut by a network of stringer pyrite with minor pyrrhotite, arsenopyrite, and chlorite.
3.	21.4 - 37.1	Syenite as in Unit #2. Only trace amounts of stringer pyrite.
4.	37.1 - 63.4	Syenite as above (Unit #3) but very broken with abundant gouge zones.
5.	63.4 - 160.6	Coarse to fine-grained equigranular intrusives. Highly variable in colour, ranging from pale to dark green. Hornblende, hornblende-biotite, or biotite monzonite to diorite. Locally the monzonites are garnetiferous. Minor quartz veining with traces of stringer pyrite.
	160.6	END OF HOLE

CYPRUS ANVIL MINING CORPORATION

DIAMOND DRILL CORE LOG

Hole Number: 80-A-03

Fabric Orientation Diagram:

Project: Pelmac

Location: Anise Claims

Claim: Anise 3

Terr. Plane Co-ords.: 61°37'N Latitude N

132°44'W Longitude E

Grid Co-ords.: L 12 + 250, 28 + 60 W

Inclination: -90°

All symmetry determinations looking _____ with _____ dipping _____ with dip azimuth _____.

Elevation: 4050 feet

Total Depth: 490 feet (149.4 m)

Purpose: Test geochemical and electromagnetic anomalies

Logged by: L. Pigage

Date(s) Logged: Sept. 14 - 17, 1980

Drilling Contractor: Arctic

Core:	Size	From	To
	BQ	40	490 feet

Collar Cased and Capped: _____

Started: Sept. 7, 1980

Completed: Sept. 10, 1980

SUMMARY LOG

DDH 80-A-03

1.	0.0 - 12.0	Triconed in overburden - no core.
2.	12.0 - 105.8	Interbanded calcareous and noncalcareous, dark grey to black graphitic phyllite. Phyllite contains numerous thin, grey siltstone bands. Siltstones are commonly slightly calcareous and contain minor disseminated pyrite. Minor amounts of medium grey, felsic tuffs with recrystallized pyrite cubes. Crosscutting quartz-carbonate veins occur in all units.
3.	105.8 - 106.6	Noncalcareous, medium grey chert pebble conglomerate. Clasts include grey and black chert, grey shale, and pyritic grey volcanics. Pyrite occurs as small grains both within clasts and in matrix.
4.	106.6 - 113.5	Noncalcareous black phyllite with minor light grey felsic tuff. Abundant grey siltstone bands in the black phyllite.
5.	113.5 - 114.9	Coarse grained white carbonate with 40 - 60% coarsely recrystallized pyrite.
6.	114.9 - 149.4	Noncalcareous dark grey grit to fine conglomerate. Elongate clasts in a phyllitic matrix. Contains interbands of dark grey to black phyllite and pale greenish grey felsic tuff.
	149.4	END OF HOLE

Several chert pebble grit and conglomerate interbands were encountered in the lower part of the DDH. Only minor amounts of felsic tuffs were intercalated with these units.

The EM conductor underneath the DDH is readily correlated with the black phyllites intersected. The phyllites are a conductive inlier within the unresponsive syenite intrusion. Units intersected in the DDH cannot account for the geochemical anomalies. It is reasonable to assume that these anomalies are also related to small fractures filled with galena and sphalerite.

CONCLUSIONS

The Anise claims are underlain by Devonian-Mississippian felsic metavolcanics (Mvt) and black phyllites (uDM_s) intruded by syenite (My).
The geology shown in Figure 3 can account for the different geochemical and geophysical anomalies on the claim group. Geochemical anomalies can be readily correlated with scattered occurrences of small fractures filled with galena and sphalerite. The magnetic anomaly is caused by pyrrhotite associated with stringer pyrite in the marginal zone of the syenite intrusion. The strong EM conductor on the northeast margin of the property is a carbonaceous phyllite inlier within the syenite.

Drilling on the different anomalies did not intersect any significant mineralization. No further work is recommended for the claim group.

LIST OF CLAIMS

Claims	Grant No.	Recording Dates
Anise 1 - 48	YA 274 - YA 321	July 26, 1976
Anise 49 - 64	YA 601 - YA 616	August 23, 1976

Selected References

Dean, P. 1977 a. Geochemical exploration report. Anise claim group. Cyprus Anvil Mining Corporation internal report, 10 p.

Dean, P. 1977 b. Geological, geochemical and geophysical report. Anise claim group. Cyprus Anvil Mining Corporation internal report, 29 p.

Mortensen, J. 1979. Stratigraphic, structural, and tectonic setting of an upper Devonian-Mississippian volcanic - sedimentary sequence and associated base metal deposits in the Pelly Mountains, southeastern Yukon Territory. Unpublished MASc thesis, University of British Columbia, Vancouver, B.C., 122 p.

CYPRUS ANVIL MINING CORPORATION

DIAMOND DRILL CORE LOG

Hole Number: 80-A-01

Fabric Orientation Diagram:

Project: Pelmac

Location: Anise Claims

Claim: Anise 24

Terr. Plane Co-ords.: 61°37'N Latitude N

132°43'W Longitude E

Grid Co-ords.: Line 104, +28W

Inclination: -90°

All symmetry determinations looking _____ with _____ dipping _____ with dip azimuth _____.

Elevation: 4000 feet

Total Depth: 676 feet (205.1 m)

Purpose: To test geochemical anomaly.

Logged by: L. Pigage and J. Mortensen

Date(s) Logged: August 30 - September 7, 1980

Drilling Contractor: Arctic

Core:

Size	From	To	
BQ	20	676	(feet)

Collar Cased and Capped: _____

Started: August 27/80

Completed: August 30/80

LITHOLOGIC LOG

DDH 80-A-01

	0.0 - 7.5	Triconed in overburden.
1.	7.5 - 9.3	Pale grey, fine to medium grained, locally slightly calcareous, slightly pyritic quartzite with medium to dark grey, slightly carbonaceous phyllitic partings. Structure: at 7.8 m S_0/S_1 69° to core axis 8.3 m S_2 35° to core axis
2.	9.3 - 11.5	Banded pale to medium grey moderately calcareous phyllitic quartzite and medium green chloritic calcareous quartzite. Irregular blebs of pyrite and pyrrhotite. Structure: 9.9 m S_1 at 55°
3.	11.5 - 33.1	Highly magnetiferous serpentinite and metabasite. Section from 11.5 to 24.4 m consists of serpentinite with magnetite + calcite (+ minor hematite) intergrowths occurring as irregular zones and broad bands. Irregular zones, bands, and stringers of pyrite are also present. Section from 24.4 - 32.7 m is slightly to moderately calcareous, pale to dark green metabasite; fine-grained and non-magnetic. Section from 32.7 - 33.1 m is banded and mottled medium green and brownish grey, noncalcareous calc-silicate. Structure: at 17.6 foliation at 65° 25.8 " 33° 31.2 " 48°
4.	33.1 - 39.7	90% of section is highly pyritic and marcasitic massive quartz. Remainder of the section is noncalcareous pale to dark grey phyllite.
5.	39.7 - 46.5	Thinly banded pale to dark grey phyllite, becoming calcareous towards the bottom of the section. Some bands are very slightly brownish (biotitic?). Structure: 41.7 m S_1 at 50° S_2 at 50^o(opposite direction) 46.0 m S_1 at 51°

6. 46.5 - 51.9 Thinly interbanded black phyllite and pale grey quartzite. Abundant narrow carbonate stringers.

Structure: 50.1 m S_1 at 42°

7. 51.9 - 62.5 Pale grey to grey green muscovite-chlorite-quartz-feldspar phyllite, locally with traces of biotite. Noncalcareous, with trace amounts of carbonate in narrow stringers. Trace of galena in a stringer at 58.2 meters.

Structure: Abundant gouge 51.9 to 54.7 m

at 56.7 S_1 at 56°

at 61.4 S_1 at 43°

8. 62.5 - 68.3 Gouge zone. Breccia fragments of the above material with minor amounts of dark grey phyllite fragments.

9. 68.3 - 72.2 Pale grey muscovite-quartz-feldspar-chlorite phyllite. Similar to Unit #7, but with less abundant chlorite. Non-to slightly calcareous with carbonate also present in narrow stringers. Minor amounts of pyrite as stringers.

Structure: 69.7 m S_1 at 75°

72.0 m S_1 at 52°

later brittle fracture at 80° in opposite direction

10. 72.2 - 75.3 Thinly banded dark grey to black, noncalcareous, slightly pyritic phyllite. Abundant narrow quartz stringers (or coarse grained siltstone bands) parallel to foliation. Quartzose bands contain disseminated pyrite. Pyrite also occurs disseminated in the black phyllite.

Structure: 73.7 m S_1 at 74°

11. 75.3 - 76.8 Medium grey, slightly to highly pyritic, carbonaceous phyllite. Pyrite occurs as disseminations, disrupted narrow bands, and with quartz and carbonate as stringers.

Structure: 75.8 m S_1 at 74°

later S_2 at 51° (same direction)

12. 76.8 - 100.3

Dark grey to black, noncalcareous, slightly pyritic siliceous phyllite with abundant non to slightly calcareous pale grey siltstone interbands. Also present are several narrow (~0.2 m) dark grey quartzose bands.

Structure: 82.9 m S_1 at 72^0
87.4 - 96.6 S_1 parallel to core axis
92.5 m S_1 at 66^0

13. 100.3 - 108.7

Slightly to highly calcareous thinly laminated pale grey siltstone and dark grey phyllite - siltstone makes up ~ 60% of the section. Parts of the highly calcareous siltstone is approaching a phyllitic marble in composition.

Structure: 100.3 - 103.5 core is broken, much quartz veining
103.7 S_1 at 44^0
S_2 (brittle kink) at 48^0
S_1 and S_2 at ~ 65^0 to each other
105.5 S_1 at 55^0
108.1 S_1 at 68^0

14. 108.7 - 109.1

Chlorite-muscovite-quartz ± feldspar phyllite. Fine-grained, pale grey-green. Finely disseminated pyrite and discontinuous pyrite laminae. Trace of calcite on stringers.

15. 109.1 - 121.7

Moderately to highly calcareous thinly laminated pale to dark grey phyllite. Abundant quartz-calcite veining. Pyrite is present locally as blebs and discontinous stringers.

Structure: 111.8 m S_1 at 67^0
116.2 m S_1 at 68^0
119.2 m S_1 at 64^0

16. 121.7 - 122.0

Slightly pyritic, noncalcareous quartz-feldspar-muscovite-chlorite phyllite. Medium grey-green. Calcite in fractures.

17. 122.0 - 140.8

Thinly laminated, highly calcareous pale and dark grey phyllites. Pale grey bands tend to be more calcareous. Pyrite occurs disseminated and as narrow often discontinuous bands and stringers. Minor quartz-calcite veining. Trace amounts of biotite are present in some bands at 125.4 meters and 129.4 meters.

Structure: 123.5 m S_1 at 44°
128.3 m S_1 at 70°
131.4 m S_1 at 69°
134.4 m S_1 at 66°

18. 140.8 - 143.0

Non to moderately calcareous, thinly laminated, pale and dark grey phyllites. Minor brecciation and abundant quartz veining present. Minor discontinous narrow bands of pyrite and pyrrhotite in the interval 141.8 - 142.0 m.

Structure: 141.9 m S_0/S_1 at 57°

19. 143.0 - 152.8

Moderately to highly calcareous, thinly laminated, pale and dark grey phyllites. Similar to Unit #17. Locally slightly biotitic with books of biotite also present in quartz veins in the interval 149.1 - 149.6 m.

Structure: 143.6 m S_1 at 64°
146.2 m S_1 at 52°
149.3 m S_1 at 63°

20. 152.8 - 160.3

Moderately to highly calcareous thinly banded pale and dark grey phyllite as above. Locally brecciated. Abundant pyrrhotite and pyrite and traces of chalcopyrite associated with quartz and quartz-carbonate veins. Pyrrhotite and chalcopyrite are early phases; they are cut by later pyrite stringers.

Structure: 156.7 m S_1 at 52°
158.5 m S_2 at 58°

21. 160.3 - 167.9

Non to slightly calcareous banded pale to dark grey phyllite as above with much brecciation (quartz and quartz-carbonate matrix) and abundant pyrrhotite and pyrite w/ trace amounts chalcopyrite. Section from 166.4 - 167.3 m is 70% sulphides (primarily pyrite) as fine grained breccia matrix.

Structure: 163.7 m S_1 at 50°

22. 167.9 - 174.1

Moderately to highly calcareous, thinly laminated pale to dark grey phyllite. Abundant quartz carbonate veining locally with pyrite and pyrrhotite. Much brecciation and irregular deformation of laminations.

Structure: 171.1 m S_1 at 52°
173.7 m S_1 at 45°

23. 174.1 - 205.1

Moderately to highly calcareous, thinly laminated phyllite as above, with rare interbands to 20 cm thick of calcareous biotitic, pale brown metatuff (?) with blebs of pyrite and minor pyrrhotite. The entire sequence contains 2 - 3% pyrite as disseminations and narrow discontinuous bands.

Structure: 175.2 m S_2 at 43°
182.6 m S_1 at 64°
186.4 m S_2 at 45°
188.4 m S_2 at 68°
192.1 m S_1 at 50°
195.2 m S_1 or S_2 at 58°
201.1 m S_2 at 52°
203.9 m S_1 or S_2 at 43°

205.1 END OF HOLE

CYPRUS ANVIL MINING CORPORATION

DIAMOND DRILL CORE LOG

Hole Number: 80-A-02

Fabric Orientation Diagram:

Project: Pelmac

Location: Anise Claims

Claim: Anise 20

Terr. Plane Co-ords.: 61°37'N Latitude N

132°43'W Longitude E

Grid Co-ords.: L 80, 24 + 50 W

Inclination: -90°

All symmetry determinations looking _____ with _____ dipping _____ with dip azimuth _____.

Elevation: 3850 feet

Total Depth: 527 feet (160.6 m)

Purpose: To test magnetic anomaly.

Logged by: L. Pigage and J. Mortensen

Date(s) Logged: Sept. 4 - Sept. 6, 1980

Drilling Contractor: Arctic

Core:	Size	From	To
	BQ	19	527 feet

Collar Cased and Capped: _____

Started: Sept. 2, 1980

Completed: Sept. 5, 1980

LITHOLOGIC LOG

DDH 80-A-02

	0.0 - 5.8	Triconed in overburden.
1.	5.8 - 20.6	Massive, coarse-grained, cream to pale grey, altered syenite. Approximately 30% of the feldspar (plagioclase ?) is altered to fine-grained, cream-coloured, sericitic or kaolinitic mass. The entire unit is extensively cut by a network of stringer pyrite with minor pyrrhotite, arsenopyrite, and chlorite. Where pyrrhotite is abundant, it appears to be an earlier sulphide phase than the pyrite - pyrite stringers crosscut the pyrrhotite. Average mafic mineral content in the syenite is 5 - 10%.
2.	20.6 - 21.4	Syenite as above, but medium green throughout both due to chloritized mafics and to a pervasive chloritization.
3.	21.4 - 37.1	Syenite as in Unit #1. Cream-coloured. Trace amounts of stringer pyrite. Locally minor amounts of gouge along fractures.
4.	37.1 - 63.4	Syenite as above but very broken with abundant gouge zones.
5.	63.4 - 76.8	Highly altered, fine to medium grained, dark green hornblende monzonite. Hornblende may be either primary or secondary. Ilmenite (subhedral to euhedral grains to 1 mm in diameter) are a common accessory. Blades of biotite are common throughout. Traces of pyrite as fine disseminations are locally present. Composition is quite variable ranging from a hornblende monzonite to a biotitic blendite. K-feldspar is completely altered to clays (as a pale tan to pinkish grey mass) and plagioclase is pervasively saussuritized.
6.	76.8 - 85.6	Medium, greenish-brown to greenish-grey, mottled medium-grained biotite monzonite. K-feldspar present as tan to medium brown clay masses. Biotite may be an alteration of hornblende. Plagioclase is pale green and pervasively saussuritized. Small bluish grains (possibly leucoxene after ilmenite) are common. Bottom 0.5 meters of the unit is cut by numerous shears.

7.	85.6 - 90.6	Highly altered, poorly foliated, fine to coarse-grained locally garnetiferous monzonite, hornblende monzonite, biotite-hornblende monzonite, and hornblendite. Composition is extremely variable with diffuse, irregular contact zones - probably flow differentiation rather than crosscutting intrusions. K-feldspar is altered to a pale brown, clay-rich mass, hornblendes and biotites are locally chloritized. Colour of the unit is extremely variable, ranging from pale to dark brown to medium and dark green. Garnets occur locally as pale pink, fine-grained aggregates to 2 mm in diameter.
8.	90.6 - 103.6	Highly altered, medium to coarse-grained, medium to dark green locally garnetiferous biotite-hornblende monzonite-diorite. Very similar in appearance to Unit #5, but contains more abundant biotite. Trace of pyrite present on fractures. K-feldspar is extensively altered to green chlorite-clay masses and plagioclase is pervasively saussuritized. K-feldspar content is variable, from 5% to 40% by volume. Garnet occurs as fine to medium grained, anhedral to subhedral, pale pink to pinkish brown aggregates to 3 mm in diameter.
9.	103.6 - 114.9	Medium to dark green, fine to medium grained hornblende monzonite. Locally slightly garnetiferous. Locally slightly biotitic. Magnetite present as fine-grained disseminations. as irregular bands to 2 cm thick, and as stringers with pyrite and quartz.
10.	114.9 - 116.7	Fine-grained, medium green hornblende porphyry. Becomes slightly coarser-grained in the middle of the unit - appears to be a narrow dyke with chilled margins.
11.	116.7 - 126.1	Fine to medium-grained, medium to dark green, ilmenite-bearing, locally slightly garnetiferous. Finer-grained zones are commonly banded and poorly foliated, often with abundant quartz stringers and lenses, and rare pyrrhotite blebs.
12.	126.1 - 136.8	Similar to Unit #11, but with a trace of biotite present throughout imparting a brownish hue to the unit. Pyrrhotite present both as disseminated blebs and as stringers.
13.	136.8 - 137.9	Medium grey, medium grained, highly calcareous siltstones. Trace of biotite throughout.
14.	137.9 - 140.7	Similar to Unit #12, with more abundant quartz veining.
15.	140.7 - 141.5	Medium green, fine-grained hornblende porphyry as in Unit #10.

16.	141.5 - 147.9	Vaguely banded, medium green to dark brown, fine to medium-grained, highly altered hornblende syenite. Locally biotitic, with blades and books of biotite associated with the hornblende, possible as an alteration product. Minor quartz veining, with trace of stringer pyrite.
17.	147.9 - 160.6	Fine to medium-grained, highly altered, medium to dark green and green-brown hornblende and hornblende-biotite monzonite-syenite. K-feldspar is altered to a chlorite-clay mass, plagioclase is pervasively saussuritized. Plagioclase content varies from 5 - 30% by volume. Rock is slightly garnetiferous throughout. Fine-grained subhedral ilmenite is a common accessory. Traces of pyrite are present as stringers, often with quartz.
	160.6	END OF HOLE

CYPRUS ANVIL MINING CORPORATION

DIAMOND DRILL CORE LOG

Hole Number: 80-A-03

Fabric Orientation Diagram:

Project: Pelmac

Location: Anise Claims

Claim: Anise 3

Terr. Plane Co-ords.: 61°37'N Latitude N

132°44'W Longitude E

Grid Co-ords.: L 12 + 250, 28 + 60 W

Inclination: -90°

All symmetry determinations looking _____ with _____ dipping _____ with dip azimuth _____.

Elevation: 4050 feet

Total Depth: 490 feet (149.4 m)

Purpose: Test geochemical and electromagnetic anomalies

Logged by: L. Pigage

Date(s) Logged: Sept. 14 - 17, 1980

Drilling Contractor: Arctic

Core:	Size	From	To
	BQ	40	490 feet

Collar Cased and Capped: _____

Started: Sept. 7, 1980

Completed: Sept. 10, 1980

LITHOLOGIC LOG

DDH 80-A-03

0.0 - 12.0 Triconed through overburden - no core.

1. 12.0 - 32.0 Noncalcareous, black phyllite with abundant thin grey siltstone laminae. Siltstone layers range up to 15 mm in thickness. Locally siltstone layers are slightly calcareous and/or contain disseminated fine to medium grained pyrite. Abundant quartz ± carbonate veining.
S_0 and S_1 are disrupted by later, brittle folding. Locally see development of a weak crenulation cleavage in association with this later folding.

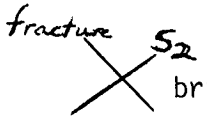
Core axis angle:

S_0/S_1	67^0	14.5 m
S_0	0^0	16.5 m
S_2	25^0	
S_3	49^0	
S_0 parallel core axis		23.7 - 31.2 m

2. 32.0 - 46.8 Interbanded on a small scale calcareous and noncalcareous black phyllite. Calcareous phyllite predominates. Minor thin grey siltstone bands which are slightly calcareous. Abundant quartz-calcite veining; locally the veins contain angular phyllite fragments. Siltstone bands tend to form wispy, discontinuous layers. Pyrite locally occurs as small nodules partly to completely surrounded by calcite.

Core axis angle:

S_1/S_0	22^0	32.3 m
S_2	40^0	
S_1	45^0	35.0 m
S_1/S_0 parallel to core axis		35.4 - 38.1 m
S_2	62^0	38.1 m
brittle fracture	38^0	
S_1	40^0	43.2 m



3. 46.8 - 48.2 Noncalcareous, medium grey, felsic tuff. Contains recrystallized pyrite cubes scattered throughout. Common quartz-carbonate veins (carbonate fizzes only when powdered). Can see minor amounts of clasts elongate in S_1 foliation; generally a clastic texture is not visible.

4. 48.2 - 51.7 Noncalcareous black phyllite with thin calcite stringers. Stringers are abundant and delineate a possible S_0. In places they are folded into microlithons. Fine-grained pyrite locally disseminated in calcite stringers. Minor amounts of medium grey pyritic felsic tuff (like last Unit). Pyrite in tuffs locally forms thin bands.

Core axis angle:

S_2	54°	49.5 m
S_0	55°	51.7 m

5. 51.7 - 65.8 Dark grey to black calcareous phyllite S_0 (?) delineated by thin calcareous stringers and laminae. Laminaes are discontinuous locally. Minor small pyrite nodules enclosed by calcite. Minor crosscutting quartz-calcite veins and fracture fillings. Some of the calcite-rich bands appear to be disrupted, closely spaced fractures. At 64.2 m have pyritic band ~8 cm thick.

Core axis angle:

S_1	40°	52.8 m
S_2	30°	56.0 m
S_1	47°	58.4 m
S_2	62°	64.0 m
S_1	30°	

6. 65.8 - 93.5 Noncalcareous dark grey to black phyllite. Contains abundant grey siltstone bands. Bands range in thickness from 1 - 2 mm up to 10 cm. Siltstone is also noncalcareous. Commonly siltstone bands are disrupted, boudinaged and folded by S_1 deformation. Locally get extensive quartz-calcite veining. Pyrite as small aggregate both in phyllite and siltstone; commonly pyrite partly enclosed by quartz. Late folding locally disrupts S_0/S_1 surfaces into brittle kink style folds.

6. (continued)

Core axis angle:

S_0/S_1	parallel core axis for most of this interval	65.8 - 67.6
S_0/S_1	29°	70.7 m
S_0/S_1	46°	71.4 m
S_0/S_1	54°	75.9 m
S_0/S_1	53°	82.9 m
S_1	90°	87.4 m
S_1	50°	93.5 m

7. 93.5 - 97.8

Black calcareous phyllite. Like Unit #5. In places abundant calcite stringers give core a pinstripe appearance. Contains minor thin grey felsic tuff bands (like Unit #3). Pyrite in tuffs forms large cubes. Thin calcareous siltstone bands present.

Structure:

S_1	60°	96.7 m
S_1/S_0	73°	97.8 m

8. 97.8 - 105.8

Noncalcareous dark grey to black phyllite with numerous thin grey siltstone bands. Both phyllite and siltstone contain disseminated recrystallized pyrite. Near lower part of interval siltstone coarsens to become a sandstone. Minor thin felsic tuff bands occur in upper part of interval. Minor quartz veining.

Core axis angle:

S_1	62°	101.2 m
S_1	60°	104.1 m

9. 105.8 - 106.6

Noncalcareous chert pebble conglomerate. Medium grey. Clast size ranges up to 10 -15 mm although most clasts are less than 5 mm. Clasts include grey, chert, black chert, pyritic grey, grey shale, volcanic (?). Pyrite as small grains both within clasts and in matrix. Clasts elongate in S_1 foliation.

Core axis angle: S_1 60° 106.2 m

10. 106.6 - 111.8 Noncalcareous black phyllite with abundant grey siltstone bands. Like Unit #8. Minor quartz ± carbonate veining. In lower part of interval core much broken with minor fault gouge. Minor felsic grey tuffs in lower part of interval.

Structure: S_1 60° 111.8 m

11. 111.8 - 113.1 Fine-grained, light grey felsic tuff. Shows poor compositional banding. Pyrite both as discrete recrystallized cubes and diffuse zones up to 5 mm thick. Noncalcareous. Minor quartz-carbonate veining.

12. 113.1 - 113.5 Noncalcareous black phyllite. Core much broken with some fault gouge.

13. 113.5 - 114.9 Coarse grained carbonate (fizzes only when powdered) with 40 - 60% coarsely recrystallized pyrite.

14. 114.9 - 116.7 Noncalcareous, dark grey argillaceous conglomerate. Very elongate clasts in a grey carbonaceous, phyllite matrix. Pyrite as recrystallized grains up to 3 mm across. Brownish carbonate abundant as veins (fizzes only when powdered). Minor black, noncalcareous phyllite interbanded with conglomerate.

Structure: S_1 50° 115.9 m

15. 116.7 - 117.8 Medium grey, noncalcareous phyllite with numerous dark grey sandstone interbands. Pyrite as recrystallized grains scattered throughout. Minor quartz ± carbonate veins. Pyrite locally occurs as fine-grained in matrix to form diffuse pyrite-rich bands.

Structure: S_1/S_0 58° 117.3 m

16. 117.8 - 125.6 Coarse dark grey grit to fine conglomerate. Noncalcareous. Clasts range up to 15 mm although most are ∿2 mm. Clasts are subrounded. Pyrite-rich felsic material as clasts (fine-grained pyrite (70%) with fine-light coloured matrix). Pyrite occurs as larger clasts. Most clasts are cream tan - may be carbonate replacing feldspars. Minor grey shale clasts. Interval from 123.0 - 124.7 consists of fault gouge.

Structure: S_1 55° 120.2 m

S_1 55° 122.8 m

17. 125.6 - 127.8 Pale olive green to grey-green tuff and lapilli tuff. Clasts/fragments locally up to 5 - 10 mm although most are about 1 - 2 mm. Minor interbands of dark grey to black grit (chert granule ?). Extremely fine-grained pyrite disseminated throughout. Minor quartz-carbonate veins.

Structure:	S_1	62°	127.2 m

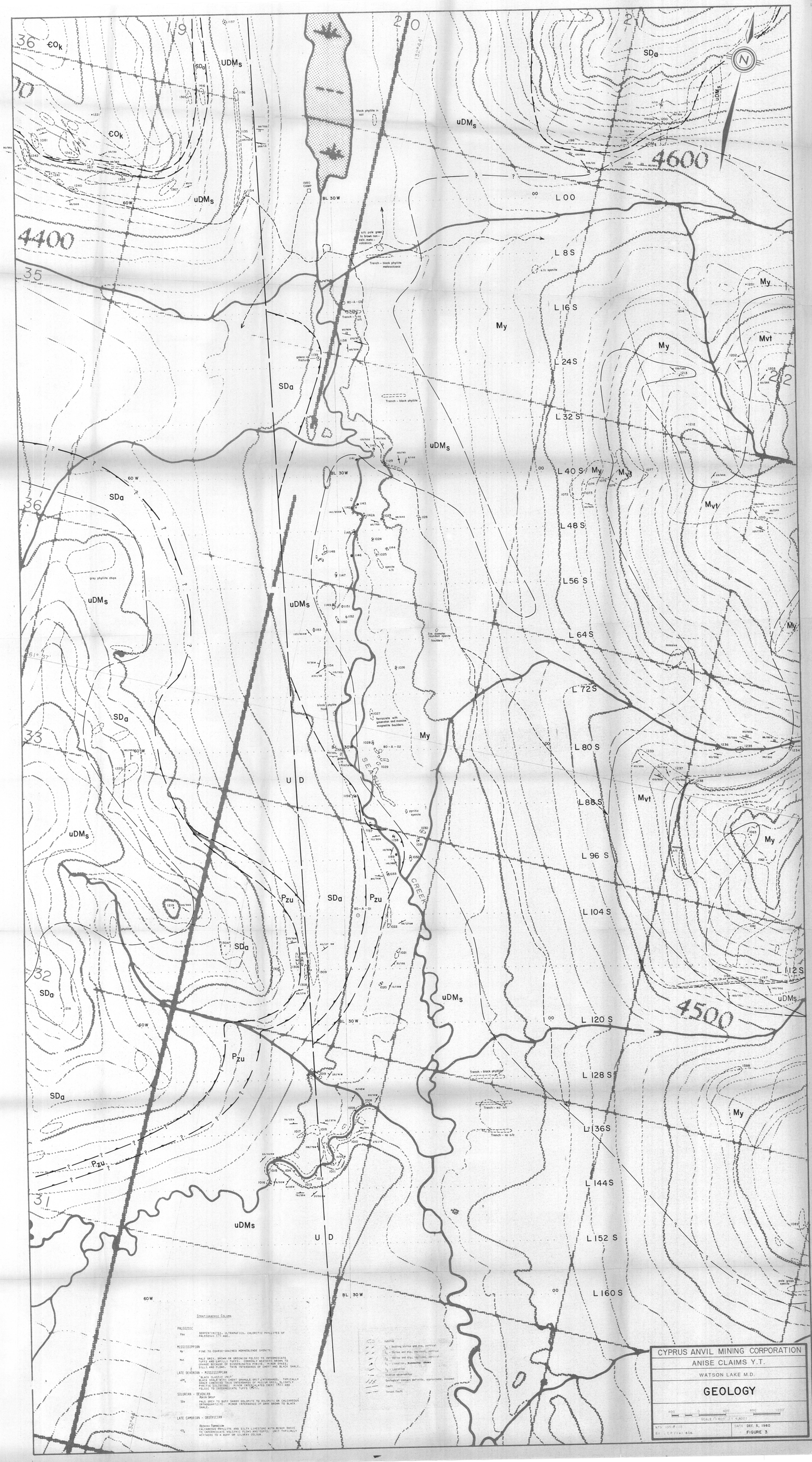
18. 127.8 - 128.7 Noncalcareous dark grey conglomerate. Clasts are subrounded to subangular. Clast size ranges from 1 mm up to 35 mm. Clasts dominantly dark and light grey shale, aggregates of fine-grained pyrite, pyritic felsic volcanics. Minor quartz veins.

19. 128.7 - 141.8 Pale olive grey-green felsic tuff (metavolcanic ?). Both upper and lower margins are lapilli tuffs (visible clasts) and grade into more massive pale green phyllite. Minor quartz $\pm$ carbonate veins. Pyrite occurs locally as fine-grained stringers and laminae. Also have diffuse zones with greater pyrite content. Noncalcareous. Locally looks like may be slightly broken with pyrite-chlorite forming matrix.

20. 141.8 - 149.4 Noncalcareous dark grey grit to fine-conglomerate. Elongate clasts in a carbonaceous grey matrix. Contains thin black to dark grey phyllite interbands. Clasts mainly light coloured. Also includes pyritic clasts (pyrite is very fine-grained).

Structure:	S_1/S_0	60°	141.8 m
	S_1	70°	145.1 m
	S_1/S_0	70°	148.8 m

149.4 END OF HOLE


CYPRUS ANVIL MINING CORPORATION
ANISE CLAIMS Y.T.
WATSON LAKE M.D.
GEOLOGY
SCALE (1"=400' ; 1:4,800)
NTS 105-F-13
DATE DEC. 5, 1980
FIGURE 3
BY L.C.P./rwr c.i.c.
STRATIGRAPHIC COLUMN
PALEOZOIC
Pzu SERPENTINITES, ULTRAMAFICS, CHLORITIC PHYLLITES OF PALEOZOIC (?) AGE.
MISSISSIPPIAN
My FINE TO COARSE-GRAINED HORNEBLENDE SYENITE.
Mvt PALE GREY, BROWN OR GREENISH FELSIC TO INTERMEDIATE TUFFS AND LAPILLI TUFFS. COMMONLY WEATHERS BROWN TO ORANGE BECAUSE OF DISSEMINATED PYRITE. MINOR DYKES, SILLS AND FLOWS. THIN INTERBANDS OF CHERT AND BLACK SHALE.
LATE DEVONIAN - MISSISSIPPIAN
uDMs 'BLACK CLASTIC UNIT' BLACK SHALE WITH CHERT GRANULE GRIT INTERBANDS. TYPICALLY SHALE CONTAINS THIN INTERBANDS OF MEDIUM GREY, SLIGHTLY PYRITIC SILTSTONE. MINOR INTERCALATED CHERT (Mt) AND FELSIC TO INTERMEDIATE TUFFS (Mvt).
SILURIAN - DEVONIAN
ROBIN GROUP
SDa PALE GREY TO BUFF SANDY DOLOMITE TO DOLOMITIC OR CALCAREOUS ORTHOQUARTZITE. MINOR INTERBANDS OF DARK BROWN TO BLACK SHALE.
LATE CAMBRIAN - ORDOVICIAN
KECHIKA FORMATION
€Ok CALCAREOUS PHYLLITE AND SILTY LIMESTONE WITH MINOR BASIC TO INTERMEDIATE VOLCANIC FLOWS AND TUFFS. UNIT TYPICALLY WEATHERS TO A BUFF OR SILVERY COLOUR.
OUTCROP
Sb - Bedding strike and dip, vertical
Sf - Strike and dip, foliation, vertical
Sl - Strike and dip, lineation, vertical
Sl - Lineation, Symmetry shown
Sl - Lineation
Station observation
Geological contact definite, approximate, assumed
Fault
Thrust Fault
Inches
centimeters
GEOLOGICAL SURVEY
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.