Report On
Geology and Mineralization

MST 1-40 MINERAL CLAIMS

Mayo Mining Division - Yukon Territory

located at

Lat. 65°09' Long. 135°04'

May 1, 1975

Alan R. Archer Consulting Engineer

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $2402.00

D B Craig

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

2400 50

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Figures in Pockets

Pocket A

Figure 16 - Claim Location, Regional Geology & Geochemistry Scale 1"= 1/2 mile

Pocket B

Figure M1 - Geology and Lead-Zinc Geochemistry MST Claims - Scale 1"= 1000'

Figure F2 - Stratigraphic Section, MST Claims - Scale 1"= 400' vertical

INTRODUCTION

The MST zinc-lead showing was found in early June, 1974, during regional exploration funded by Ogilvie Joint Venture (Chevron Standard Ltd., Aquitaine Co. of Canada Ltd., Marietta Resources International Ltd., L & H Clay) and managed by Archer, Cathro and Assoc. Ltd. The claim area was explored by geological mapping, reconnaissance geochemical sampling and minor rock sampling. This work was performed by field geologists C. Forster, T. Bremner , T. McLeod and D. Hendry under the supervision of M.P. Phillips and the writer.

PROPERTY, LOCATION AND ACCESS

The MST property consists of 40 contiguous mineral claims recorded in the Mayo Mining District as follows-

Claim Name	Grant Numbers	Expiry Date
MST 1-16	Y88865-Y88880	21 June, 1975
MST 17-40	Y97000-Y97023	13 Sept, 1975

The property is located between the Wind River and Illtyd Creek at approximately Latitude 65°09' North and Longitude 135°04' West. Access was by helicopter from a camp situated at Kiwi Lake some 14 miles to the northeast. The Kiwi Lake camp was supplied by float plane from Mayo which is 120 airmiles to the south. The claim outline and general location is illustrated on Figure 16.

GEOLOGY

The geology of the general area is illustrated on Figures 16 and M1 and the stratigraphic section on Figure F2. The MST claims cover a sequence of Cambrian carbonates, shales and clastics that lie unconformably on Proterozoic quartzites, shales and cherty dolomite.

A description of individual Cambrian units on the property are as follows -

Unit 1Cls (650') - a thin wavy limestone lying unconformably on Proterozoic sediments that forms the base of the section.

Unit 1Ccl - (1150') - limy clasts and grits with abundant trilobite and cephalopod fossil horizons. Grits vary from fine sand to poorly sorted pebble size. This unit thickens and becomes coarser grained towards the west, which is the probable source direction.

Unit $1Ccl_2$ (50') - a poorly sorted, well rounded quartzite and chert pebble to boulder conglomerate that is found near the top of Unit 1Ccl. It thickens to the west and pinches out before reaching the eastern boundary of the MST claims. The mineralization occurs in and/or near the eastern pinch out area of this sub-unit.

Unit $1Cld_{5\ \&\ 6}$ (550') - a thin bedded orange-weathering oncolitic dolomite representing low energy shelf carbonate deposition. Contains minor reefal zones with pyrobitumen.

Unit $1Cld_2$ (200') - a dark grey brecciated dolomite with chert bands that thickens to the west.

Unit CO_{fm} (550') - a thin bedded yellow-brown weathering light grey dolomite that lies unconformably on Unit 1Cld. The lack of Karst erosion features in 1Cld suggests that the middle Cambrian unit is missing because it was not deposited in this area.

The above units strike easterly and dip about 30° to the south and are cut by strong northeast trending faults.

MINERALIZATION

Sphalerite, galena and marcasite replace and/or form the matrix in intermediate to coarse size grit horizons. There is little outcrop in the mineralized area and the best grade mineralization (up to 16 per cent combined lead-zinc) is found in float that is not abundant, suggesting mineralized grit horizons are thin and discontinuous. Float fragments tend to be either galena rich or sphalerite rich. The few outcrops found in the area are only weakly mineralized and a chip sample from the best grade outcrop returned only 1.72 per cent zinc, 0.34 per cent lead and trace silver. Spectrographic analysis indicates no other metals of interest other than the usual minor cadmium content in sphalerite.

This mineral showing warrants further work because of its intriguing sedimentary features rather than because it has obvious economic potential. The potential here is that thick and porous and permeable zones can be found in the grits with grades in the 10 per cent zinc-lead range. The only other similar deposit of which the writer is aware is the L'Argentiere Mine in southeastern France where lower Triassic grits contain about 5 per cent combined lead-zinc. More attention was given to grit units by OJV following the MST discovery but no other mineralized areas were found.

GEOCHEMISTRY

Soil and stream sediment values in parts per million lead and zinc are illustrated on Figure M1. Samples were collected in prenumbered kraft bags and shipped air freight to Chemex Labs Ltd, North Vancouver, B.C. Here, samples were dried, screened to minus 80 mesh and digested in

nitric-perchloric acid and analysed for lead and zinc by atomic absorption spectrometry.

Silt sampling indicates that the area of interest has limited surface extent. The main creek draining the showing returned a moderately anomalous 180 ppm lead and 612 ppm zinc while a side drainage, closer to the mineralization, has more contrast at 2520 ppm lead and 4850 ppm zinc. No other streams in the area are anomalous. A few samples of fine talus were collected and the relatively low lead and zinc contrast appears to indicate that only restricted mineralized zones are present at surface.

SUMMARY AND CONCLUSIONS

Prospecting and stream sediment sampling indicates that mineralization is restricted to an area of several claims. This area should be explored by detailed mapping and grid soil sampling to outline specific zones of interest.

Respectfully submitted,

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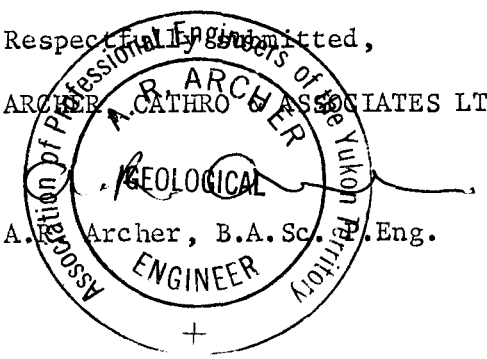

A. R. Archer, B.A.Sc., P.Eng.

GEOLOGY & COPPER LEAD, ZINC GEOCHEMISTRY
ILLTYD CREEK AREA
OGILVIE JOINT VENTURE

FIG. 16
ARCHER, CATHRO & ASSOCIATES LTD.

SCALE IN MILES

LEGEND

MESOZOIC
CRETACEOUS
- Ku — Sandstone and conglomerate

PALEOZOIC
CARBONIFEROUS - PERMIAN
- CP — Thinbedded dolomite, sandstone and shale

DEVONIAN
UPPER DEVONIAN
- uDfc — FORT CREEK FORMATION: Grey shale, rusty weathering pyrite
MIDDLE DEVONIAN
- mDn — NAKINA FORMATION: Limestone, dolomitized & tuffaceous crinoidal, corals, brachiopods; reef phrygy; Tatlo
- mDh — HEADLESS FORMATION: Brown weathering, argillaceous rusty platy limestone
- mD — Includes MINOR B and LAGERY FORMATIONS: Light to dark grey, bedded dolomite
LOWER DEVONIAN
- lD — Includes SOWERS, CHANTZI Lake and SELDOM FORMATION: Bedded limestone and recrystallized dolomite

ORDOVICIAN-SILURIAN
- OSmk — MOUNT HAGUE FORMATION: Medium grey, well forming dolomite. Other lithologies: siltstone, sandstone

CAMBRIAN
CAMBRO-ORDOVICIAN
- COfm — FINLAIN, MOUNTAIN FORMATION: Yellow-brown weathering thin-bedded, dolomitic, light grey dolomite.
- mEx — UNCONFORMITY: Brecciated white dolomite marking the unconformity between the upper and middle Cambrian
- mCd — Limestone cong as ground, white dolomite
- mCl — Grey-green limestone with pebbles and/or surface
LOWER CAMBRIAN
- lCfs — Fissile shale - dark grey, purple or green dolomite shale, micaceous and phosphatic fossil fish fossil
- lCfd — Rusty dolomite - reef breccia weathering, thin bedded, white to grey dolomite, minor shale, fossil fish fossil. Lithologies are similar to those in the underlying Ilse, but unit is in direct contact of the Fly Ow and is stratigraphically thicker at Finlay
- lCis — Limestone and dolomite breccia
- lCis — Dark grey dolomite with possible fossil debris. Clean bands and quartz veins
- lCis — Interbedded dolomite with limestone and pyroclastics
- lCis — Dark grey dolomite, limestone, dolomitic limestone and pyroclastic sediments, in part very rusty weathering dolomite. Minor to rare reef, possibly stromatolitic dolomite. Minor to rare reef, possibly stromatolitic
- lCc1 — Volcanic breccia - fragmental grits & conglomerate & volcanic rock grey-green
- lCc1s — Minor Cambrian Limestone - thin bedded massive, crinoidal, black limestone

PROTEROZOIC
HADRYNIAN
- Hfr — RIDLE FORMATION: Tuffaceous rhyolite
- Hr — RAINBOW GROUP: Tuffs, chloritic conglomerate, and formation
- Hsfe — Tuffs, sandstone and basalt conglomerate

HELIKIAN
- Hsc — Grey schist, argillites, quartzites and limestones
- Hsfe — Grey schistic chloritic quartz schists, quartzwackes and acid tuffs; Sandstones, Fossil schists and coal formation

PC — UNDIFFERENTIATED

- (S) — Geochemical anomaly described in text
- x — Silt
- • — Soil
- Pb,Zn — Outcrop of lead, zinc oxides, sulphides and/or carbonates, galena, sphalerite, pyromorphite, pyrite and iron oxide stained
- 6 ● — Float - number indicates interest occurrence described in text
- Geophex and/or veining
- Geophex and/or breccia
- Outcrop
- Defined contact
- Assumed contact
- Approximate contact
- Defined fault
- Assumed fault
- Foliation
- Dip and strike
- Greater than 75°
- Greater than 45°
- Greater than 25°
- Anticline
- Syncline
- Vein
- A — A' — Stratigraphic sections FIG #2

For assessment report dated May 1975

64°55'

65°10'

135°05'

1Cis

Hk

1Cc1 1.

1Cc1 2.

1Cc1 3.

1Cd 4.

1Cd 6.

1Cd 5&6

1Cd 2.

1Cd 1.

COfm

OSmk

mCd

See Detail

MST CLAIMS

GEOLOGY

MESOZOIC

CRETACEOUS

Ku — Sandstone and conglomerate

PALEOZOIC

CARBONIFEROUS - PERMIAN

CP — Thin bedded dolimite, sandstone and shale

DEVONIAN

UPPER DEVONIAN

uDfc — FORT CREEK FORMATION
Black shale, rusty weathering, often pyrite

MIDDLE DEVONIAN

mDn — NAHANNI FORMATION
Grey, reefoidal limestone, abundant 2 hole crinoids, corals, brachiopods and strongly fetid.

mDh — HEADLESS FORMATION
Brown weathering, argillaceous silty platy limestone

mD — includes ARNICA and LANDRY FORMATIONS –
Light to dark grey bedded dolomite.

LOWER DEVONIAN

lD — includes SOMBRE, CAMSELL and DELORME FORMATION
Bedded limestone and laminated dolomite.

ORDOVICIAN - SILURIAN

OSmk — MOUNTKINDLE FORMATION
Massive grey, cliff forming dolomite. Often brecciated, silicified and fossiliferous.

CAMBRIAN

CAMBRO - ORDOVICIAN

COfm — FRANKLIN MOUNTAIN FORMATION
Yellow-brown weathering, thin bedded, recessive, light grey dolomite.

UNCONFORMITY

mCx — Brecciated white dolomite marking the unconformity between the upper and middle Cambrian.

mCd — 1. bedded, coarse grained, white dolomite.
2. thin bedded, limy dolomite - intercalated chert bands, calcareous shale abundant interclasts, ripple marks and mud cracks.
3. thin bedded orange to brown weathering dolomite.
4. massive, light grey, structureless dolomite - algal mounds.?

mCl — Dark grey, algal limestone with oncolites and/or oolites.

LOWER CAMBRIAN

lCfs — Flunk shale - Bark grey, purple or green dolomite shale, recessive and generally found as talus.

lCfd — Flunk dolomite - red-brown weathering, thick bedded, white to grey reefoidal dolomite. Generally porous, vuggy, brecciated and tertiary dolomitized, the unit hosts a major portion of the Pb-Zn-pyrite mineralization found at Flunk.

lCld — Limy dolomite with intercalated:-
1. dark grey dolomite with psuedobrecciation. Chert bands and quartz viens.
2. reefoidal dolomite with bitumen and porosity.
3. thin bedded limestone with clastics, trilobites, oolites and oncolites.
4. light grey, cliff-forming dolomite - structureless and possibly represents algal mounds.
5. oncolite dolomite.
6. orange weathering, thin bedded dolomite.

lCcl — Clastics including:- 1. calcareous grits 2. conglomerate 3. siltstone 4. dark grey shale.

lCls — Basal Cambrian Limestone - thin bedded nodular, oncolitic, black limestone.

PROTEROZOIC

HADRYNIAN

Hk — KEELE FORMATION
Orange weathering algal dolomite, siltstone

Hr — RAPITAN GROUP
Shale, siltstone, conglomerate, iron formation

Hsfc — Slate, sandstone and basal conglomerate

HELIKIAN

Hsc — Dark slates, argillites, quartzites and limestone

Hasc — Argillite, chlorite-sericite schists, pyroclastics and acid lavas (exhalitives?) quartzites and iron formation.

PC UNDIFFERENTIATED

LEGEND

- x Soil
- • Silt
  } Pb, Zn in ppm
- ■ Rock - Pb %, Zn %, Ag oz/ton.
- 30° Dip and strike
- Fault
- Contact defined
- Contact approximate
- Mineralized outcrop

DETAIL

MST LEAD, ZINC GEOCHEMISTRY

SCALE IN FEET
0 100 200

N

1.53, 14.67, 0.12 (creek float)

62,140

104,360

500,440

768,2000

940,2000

74,189

744,392

270,344

>4000, 3400

0.97, 3.30, 0.24
2.78, 6.60, 0.44
0.10, 1.28, 0.15
(talus float)

3 ft. chip sample
0.34, 1.72

1340, 3400
387, 1260
620, 1320
1360, 1208
550, 1108
74, 305
60, 285
58, 306

2165, 74000
6.15, 0.18
(talus float)

MST

CREEK

1Cc1 1.

1Cc1 2.

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GEOLOGICAL
May 1/75
ENGINEER

FIG. MI

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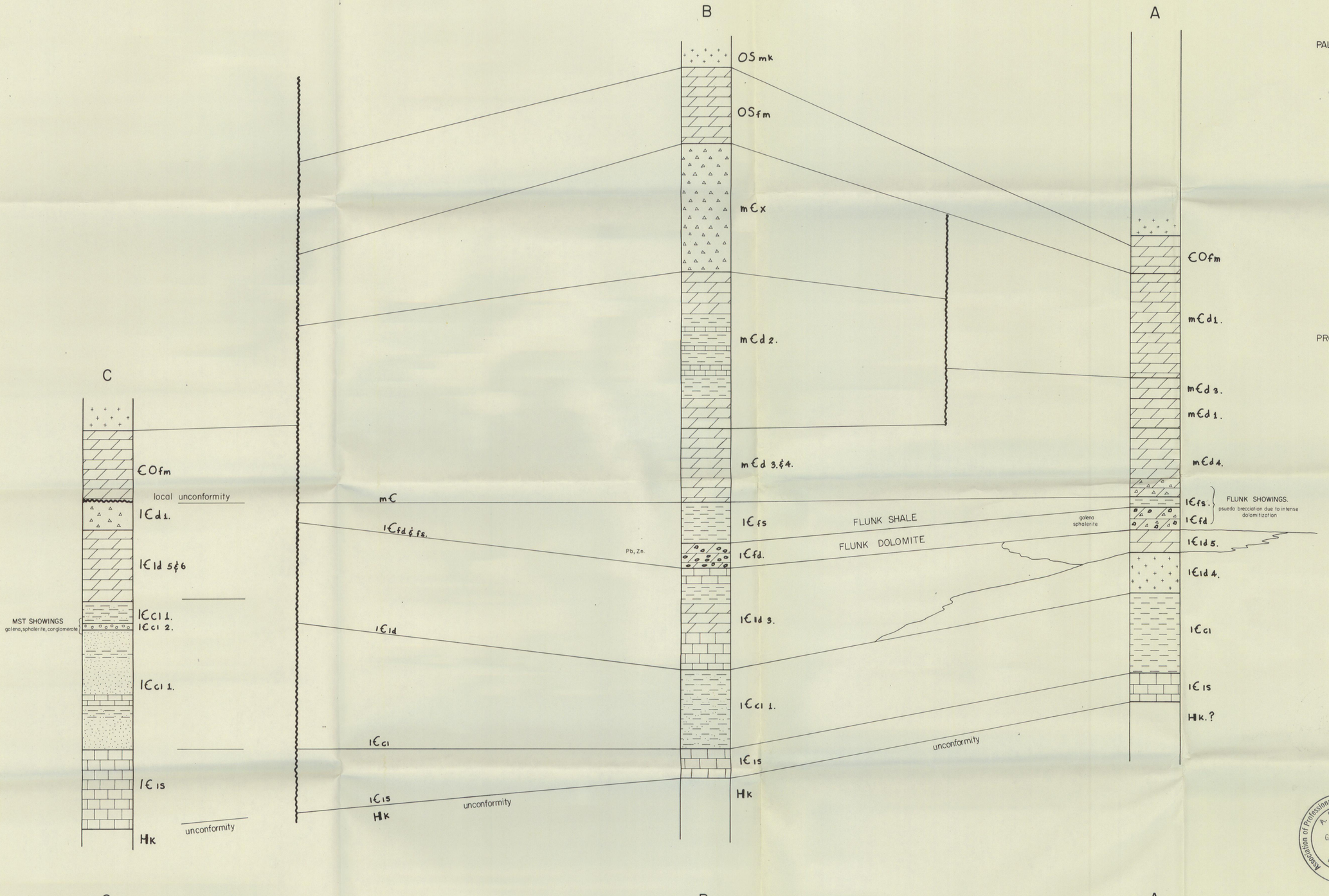
GEOLOGY & LEAD, ZINC GEOCHEMISTRY

MST 1-40 CLAIMS

OGILVIE JOINT VENTURE

SCALE IN FEET
1000 0 1000 2000

To accompany report dated May, 1975



GEOLOGY

PALEOZOIC

ORDOVICIAN-SILURIAN

OSmk — MOUNT KINDLE FORMATION
Massive grey, cliff forming dolomite. Often brecciated, silicified and fossiliferous

CAMBRIAN

CAMBRO-ORDOVICIAN

€Ofm — FRANKLIN MOUNTAIN FORMATION
Yellow-brown weathering, thin bedded, recessive, light grey dolomite

UNCONFORMITY

m€x — Brecciated white dolomite marking the unconformity between the upper and middle Cambrian.

m€d — 1. bedded, coarse grained, white dolomite
2. thin bedded, limy dolomite - intercalated chert bands, calcareous shale abundant interbeds of argyle marls and mud cracks
3. thin bedded orange to brown weathering dolomite
4. massive, light grey, structureless dolomite - algal mounds ?

m€l — Dark grey, algal limestone with oncolites and/or oolites

LOWER CAMBRIAN

1€fs — Flunk shale - dark grey, purple or green dolomite shale, recessive and generally found as talus.

1€fd — Flunk dolomite - red-brown weathering, thick bedded, white to grey reefoidal dolomite. Generally porous, vuggy, brecciated and tertiary dolomitized, the unit hosts a major portion of the Pb-Zn-pyrite mineralization found at Flunk.

1€1d — Limy dolomite with intercalated -
1. dark grey dolomite with psuedobrecciation. Chert bands and quartz veins
2. reefoidal dolomite with tuberiginal porosity
3. thin bedded limestone with clastics, trilobites, oolites and oncolites
4. light grey, cliff-forming dolomite - structureless and possibly represents algal mounds
5. oncolite dolomite
6. orange weathering, thin bedded dolomite.

1€c1 — Clastics including - 1. calcareous grits 2. conglomerate 3. siltstone 4. dark grey shale

1€1s — Basal Cambrian Limestone - thin bedded nodular, oncolitic, black limestone.

PROTEROZOIC

HADRYNIAN

Hk — KEELE FORMATION
Orange weathering algal dolomite, siltstone

SYMBOLS

- Bedded dolomite
- Bedded limestone
- Shale
- Siltstone and shaly grits
- Conglomerate
- Reefal dolomite (algal mounds)
- Vuggy dolomite
- Breccia

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FIG. F2
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STRATIGRAPHIC CROSS-SECTIONS OF FLUNK & MST CLAIM AREAS

SEE FIG. 16 FOR LOCATIONS

VERTICAL SCALE 1" = 400'
HORIZONTAL SCALE
A-C = approx. 30,000 feet

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May 1/75

To accompany report dated May, 1975