C O N T E N T S

J. G. Murphy, P.Eng

I L L U S T R A T I O N S

J. G. Murphy, P.Eng.

INTRODUCTION

Location

The Peel Plateau Project Area is a nearly rectangular block of 12,525 square miles in the Yukon and Northwest Territories between parallels 65° 15' and 66° 15' and meridians 128° 30' and 135° 00'.

Access

The area described in this report is readily accessible by boat or float plane.

Geological field parties can leave from Norman Wells or Ft. McPherson by float plane and set up field camps on numerous lakes and rivers west of Trevoir Range or north of latitude 65° 45'. In the remainder of the project area only two lakes, one at approximately 130° 00' Latitude, 65° 30' Longitude and the other at approximately 133° 00' Latitude, 65° 27' Longitude can serve as field camp sites reasonably close to outcrops in Mackenzie Mountains. Helicopters operating from the fixed wing supported field camps provide the only method of transportation that will enable geologists

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to field check this large project area during the short summer seasons.

Heavy Equipment can be sent from Edmonton via the Mackenzie Highway to Hay River and thence by shallow draught boat across Great Slave Lake and down the Mackenzie River to the eastern part of the area. Peel River, tributary of Mackenzie River, can be used to transport equipment and supplies to the western part of the area. Another, and perhaps better route, is from West Coast ports around Alaska to the docks and storage facilities now being constructed at Tuktoyaktuk in Kugmallit Bay, or to the new Aklavik townsite on the east bank of the Mackenzie River (6) The supplies and equipment could then be transported up stream by landing craft type vessels to the eastern or western part of the project area via Mackenzie and Peel Rivers respectively and later distributed locally by land transport when the frost is in the ground.

Even after the road, now being surveyed, from Dawson to Ft. McPherson is completed,

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Geol. Surv., Canada, Mem. 247, 1948, pp. 19-31.

(2) Dowling, D.B. Geological Structure of the Mackenzie River Region; Geol. Surv., Canada, Sum. Report, 1921, part B pp. 79-90, 100b.

(3) Gabrielse, H. Geol. Recon. in the Northern Richardson Mts., Yukon and NWT, Geol. Surv., Canada, Paper 56-6, 1957.

(4) Goodman, A.J. Tectonics of East Side of Cordillera in Western Canada. Western Canada Sedimentary Basin, published by AAPG 1954, pp 341-354.

(5) Hume, G.S The Lower Mackenzie River Area, NWT and Yukon, Geol. Surv. Canada, Mem. 273, 1953. (Note: Herein referred to as the "Canol Report".)

(6) Thomas, B.H.J. Editorial: "The Awakening", The Alberta Professional Engineer, vol. 12, no. 3, June 1958, p 2.

(7) Warren & Stelck Continental Margins, Western Canada, Journal of the Alberta Society of Pet. Geol., Vol. 6, No. 2, Feb. 1958, pp. 29-42.

(8) Wheeler, J.O. A. Geol. Reconn. of the Northern Selwyn Mts. Region, Yukon and NWT., Geol. Surv., Canada Paper 53-7, 1954.

(9) Geological Map Canada, Map 1045A, Geol. Surv., Canada, 1955

(10) Geological Map Yukon Territory, Geol. Surv., Canada, 1957.

R E G I O N A L G E O L O G Y and G E O M O R P H O L O G Y

General Statement: This chapter concerns the geology of the region lying south of the Arctic Coast to the northern Mackenzie Mountains and west to Richardson Mountains. It includes Peel Plateau, western Franklin Mountains and the northern part of Interior Plain. (See map 922A in pocket for physiographic subdivisions).

Regional Stratigraphy

Except for a few small intrusions in the Mackenzie and Richardson Mountains, the rocks exposed within the region are of sedimentary origin. Not less than 20,000 feet of sediments were deposited over the region from Cambrian to Tertiary time. However, sedimentation was not continuous nor synchronous as there were evidently long periods of non-deposition and erosion. No strata of Ordovician age could be identified positively by Canol geologists east of Richardson Mountains or far north of Backbone Ranges in Mackenzie Mountains. Silurian and Devonian

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clinoriums, the northern most one having a steep north flank that in places was thrust northward toward Peel Plateau. The Canyon Ranges rise abruptly from Peel Plateau reflecting, for the most part, steep bedding dips, rather than fault scarps. Southeast of Mountain River, Canyon Ranges become less rugged and show the presence of an old erosion surface or plateau.

Backbone Ranges are higher and more closely folded than Canyon Ranges and were apparently formed contemporary with Canyon Ranges and then uplifted a second time, thereby causing destruction of most of the plateau that is still preserved in Canyon Ranges.

Bonnet Plume Basin: The widest part of the Richardson Mountain anticlinorium and the narrowest part of Mackenzie Mountains terminate in Bonnet Plume Basin where their respective structural elements are largely obscured by Tertiary and Quaternary deposits.

In Interior Plain, a westerly plunging arch of Paleozoic rock, with its axis striking approximately between the Arctic Circle and the 67th parallel, is flanked on the south and west by Cretaceous strata of Peel Plateau and on the north by Cretaceous strata of the coastal region. This arch is not without local structure. There is little relief on the northern flank of the arch except where Anderson River has cut into Cretaceous rock.

The Peel Plateau flank of the arch exhibits considerable relief as it rises from Interior Plain in three steps and, as already described, ends abruptly against Richardson and Mackenzie Mountains. Along the top step of Peel Plateau are westerly trending axes of a large syncline that parallels Mackenzie Mountains about 12 miles north of the mountain front. The evenness of large areas of the plateau is a striking feature. Narrow river trenches, estimated to be 600 feet deep, cut the even surface of the plateau.

Franklin Mountains finger westward into Peel Plateau in the form of widely spaced block faulted anticlines. They are separated from Mackenzie Mountains by Mackenzie Plain and from one another by flat lying Cretaceous strata.

Regional Historical Geology

In reconstructing the geological events of the region, material is necessarily obtained largely from publications of the Geological Survey of Canada. It becomes obvious when reading these reports that public knowledge of the region is meager. Useful hypothesis can be formed by extending the facts both recorded or implied in these reports in conjunction with photogeological information along lines of regological reasoning. However, knowledge of the area is increasing rapidly and it is expected that geologists who have done recent work in the region will find that these lines of reasoning may pass through some points of divergence.

Vertical sedimentation in the region was restricted throughout long periods of geologic time compared to deposition that took place to the south. This may be explained by a craton* extending from the shield to the Eagle Plain

*A craton is a stable area, and its meaning is somewhat similar to that of shield. However, it appears that cratons may be covered by thin sediments from time to time whereas shields are almost never submerged. "Shelf" may also be used here with the same meaning of craton.

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suggested when analyzing the structure of Franklin Mountains which are apparently related to re-activated pre-Cretaceous basement fractures (page 28). The mentioned hypothecial fractures could very likely have been formed during the initial stage of a prolonged epeirogenic uplift of the craton. The development of this uplift is shown by the gradational contact of the reef bearing shale into overlying Upper Devonian sandstone and subsequent emergence and erosion to Cretaceous time.

The positive epeirogenic movements of the craton, reflected by disconforities, were most pronounced in post-Ordovician and post-Upper Devonian time. At least 1500 feet of Ordovician exists on the east side of Richardson Mountains and about 4500 feet of Ordovician is reported in the western part of Canyon Ranges, but no Ordovician has been recognized in the northern Canyon Ranges. The post-Upper Devonian uplift allowed erosion to remove, in some places, the entire Upper Devonian section as at the Ramparts and in

Franklin Mountains where Cretaceous overlies Middle Devonian rocks. A less severe period of erosion occurred between Middle and Upper Devonian time, but apparently did not spread far down the southern and western flanks of the craton. Reefs of Middle Devonian age on the south flank of the shelf may have been elevated above sea level during this time and partially destroyed.

Relatively local tectonic movements are recorded on the flanks of the craton in northern Richardson and Selwyn Mountains where angular unconformities exist between Cambrian and Carboniferous; Upper Devonian and Permo-Pennsylvanian and between Cambrian and Ordovician rocks respectively. There is no evidence that the portion of the geosyncline immediately adjacent to the craton was subject to orogenic movements until late Cretaceous time when seas were expelled and Tertiary deposits were laid down in Bonnet Plume Basin and other basins being formed amid the uplift of Franklin, Mackenzie and Richardson Mountains.

During Pleistocene time, glaciers covered

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TABLE OF FORMATIONS

Era	Period	Formation	Lithology
CENOZOIC	Quaternary		sand, gravel
	Tertiary		sand, gravel shale, lignite
MESOZOIC	Cretaceous		sandstone mbr. shale mbr. sandstone mbr.
PALEOZOIC	Upper Devonian	Imperial	fine-grained sandstone and shale
		Ft. Creek	bituminous shale, limestone, reefs.
	Middle Devonian	Ramparts	limestone mbr with or without reef. shale mbr. limestone mbr
	Devonian or Silurian	Bear Rock	brecciated dol., lst., gypsum
	Silurian	Ronning group	limestone
	Ordovician		argillites and shale
	Cambrian		limestone, shale, gypsum

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Ordovician

Ordovician strata, as determined by Stelck, occur in the lower canyon of Peel River and consist of shales and argillites 1500 feet thick. Perhaps a thin section of Ordovician rock occurs in Mackenzie Mountains with beds assigned a Cambrian age.

Silurian

Ronning Group

On Arctic Red River, McKinnon mapped 1100 feet of limestone that fits the photographic character and position of the Silurian Ronning group. Throughout Mackenzie Mountains, the Ronning can be separated on air photos from the underlying Cambrian on the basis of its light tone, massiveness and resistant nature in comparison to the dark and laminated beds below. In Trevor Range and portions of the western Mackenzie Mountains, the Ronning could not be identified as a separate unit. In these areas, the Silurian was mapped with the possible inclusion of the Silurian (?) Bear Rock formation. A Silurian reef occurs on the west flank of Trevor Range.

measures only 275 feet. Still further west in the Snake River area of the Mackenzies, it is again possible to sub-divide about 1000 feet of the formation. The varying thickness of the Ramparts may largely be due to pre-Upper Devonian erosion. Canol Map 1003A shows that the Ramparts formation is gradually bevelled towards the north.

On Beavertail and East Mountains, highly petroliferous coral reefs occur in what could be considered Middle Devonian horizons. Uncertainty as to the age of these reefs is expressed by Canol geologists apparently because reefs that are attached to the Upper Ramparts have been traced westward (on Carcajou Ridge) into an area where a shale intervenes between the reef and the Upper Ramparts, thereby causing confusion with reefs that are known to exist in the Upper Devonian Ft. Creek shale. In analyzing the age problem of the reefs, the erosional interval between Middle and Upper Devonian strata should be considered. While this erosion interval is not noted in the Canol Report to be present in the reef areas, it could be too subtle to have been recognized. On the seaward side of the shelf, erosion may have taken place only on some reefs that protruded above sea level. These reefs were later submerged and either covered with shale or perhaps used as building sites for Upper Devonian reefs (Ft. Creek age). Thus, if an unconformity exists, it would be only within reefs or between the reef and the overlying shale.

Upper Devonian

Ft. Creek formation

The Fort Creek formation is a widespread highly bituminous shale that grades upward into the Upper Devonian Imperial formation by the inclusion of sandstone. Its lower boundary is more definite for it lies disconformably on Middle Ramparts shale in the northern part of the project and conformably on Upper Ramparts limestone towards the south. In places it contains bioherms and limestone beds. Oil is produced from one of these bioherms at Norman Wells, 50 miles southeast of the project area. Unfortunately, the

the fact that deep erosion of the plateau has destroyed the reservoir possibilities of the top and middle members and perhaps part of the lower member.

On the Geological Map of Yukon Territory, the Cretaceous is mapped on Snake River in Mackenzie Mountains as resting on Ramparts. Photogeological study indicates this relation would give an unusually thick section of Cretaceous and for this reason part of the Cretaceous shown on the government map may actually be Imperial (with a very thin, if not absent, Ft. Creek formation).

As noted in the Canol Report, the Imperial is sometimes difficult to distinguish from the Cretaceous and this is also the case in air photo studies.

Tertiary

Tertiary gravel, sand and shale with lignite beds occurs in Bonnet Plume Basin and overlies with high angular unconformity Cambrian and younger strata.

Quaternary

Glacial drift covers three-quarters of the project. Between Mackenzie Mountains and the south flank of Arctic Red River syncline, over large areas of Bonnet Plume Basin, Peel Plateau and in Franklin Mountains, the drift has prevented adequate mapping of structure and stratigraphy. Except in the complicated Bonnet Plume Basin, the drift has not been mapped. Outcrops through the drift are found on the maps by the presence of dip symbols. Outcrops beneath the drift exist along all the large rivers which have cut their way deeply through Peel Plateau.

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north flank that is rarely overthrusted to the north. Mackenzie and Franklin Mountains are nicely explained by A.J. Goodman (4). He writes "The pattern of mountain building as expressed in the compressive phase is a reflection of the basement weakness developed in the phase of geosynclinal subsidence. When compression caused crustal shortening, the broken down blocks of the basement over-rode one another and caused equivalent shortening in the overlying strata. The latter folded or faulted according to their composition, their thickness, their lamination and the load of overlying rocks. Away from the main geosynclinal depression the fractures in the basement would be wider spaced and would decrease in throw on the margins of the depression. This would explain the spacing of the foreland ranges of the Mackenzie system."

While the writer believes Goodman's ideas are well illustrated, he does not believe, as Goodman does, that compression created all the structures in Franklin Mountains that exhibit the fault-block pattern. Steeply dipping longitudinal and transverse reverse faults with the north and/or south block up, scissor faults and normal faults could all be the result of vertical uplift associated with the regional uplift and subsidence of the craton during Devonian time and later during Cretaceous-Tertiary time. Disconformities show that compression and shortening of the strata were not contemporary with the Devonian uplift. This movement was probably all vertical with the hinge line being the most active belt of movement because of its inherent weakness sustained by constant flexing. During late Cretaceous time, vertical uplift was interfered with by compression directed from the uplift of Mackenzie Mountains, however, the effect of the compression diminished northward and did not carry far beyond Imperial anticline. Stress was largely absorbed in Mackenzie Mountains.

Vertical uplift of the basement created the large folds of Canyon Ranges. Evidence of vertical uplift of Canyon Ranges is shown by: nearly horizontal top of the anticlinorism; lack of extensive foothill structure; two major faults having the north block up (rather than the south block, as would be expected if compression was

Cretaceous sandstone and shale.

The axis of Hume River anticline is located on the photogeologic map two miles south of the axis shown in the Canol Report. It does not appear to be an extension of Whirlpool anticline as is suggested in the Canol Report. The anticline strikes north, 40 degrees west. There is an eastern plunge of about 1½ degrees, but no western closure could be seen. Outcrop is Cretaceous.

Whirlpool anticline has been interpreted somewhat differently than in the Canol Report. It has a steep south flank, indicative of faulting and plunges both east and west. Outcrop is Imperial sandstone.

West Mountain anticline strikes north, 55 degrees east. It is a long narrow structure of Middle Devonian rock.

Lost anticline: This structure was not mapped by Canol geologist. Only isolated, almost vertical, barely discernible flat irons projecting through the drift indicate that a structure exists. Field work may prove this structure is not an anticline.

All of the above anticlines may be due to upthrust faults in the subsurface and have the same origin as Franklin Mountains. There are several points in favor of this interpretation. If they were formed by compression directed from the uplift of Mackenzie Mountains, a considerable distance to the south, they would be expected to have a greater length and be aligned parallel to the mountains like the Arctic Red River syncline. Instead, they are local features and strike at wide angles to the regional Peel Plateau structure. In general, they are in line with one another and with Franklin Mountains. These hypothetical statements are made because of the possible relation between Franklin Mountains type structure and Ft. Creek bioherms. If reefs exist on Ramparts River, Hume River and Lost anticlines, then the fact that they may not be closed structures is of little importance.

Snake River anticline was mapped on Peel River and carried southeast to Snake River on very slight dip information. Dips of 15 degrees occur on the north flank of the anticline on is related to the influence the Mackenzie Mountain structures had on what the writer believes to be the older Richardson Mountains.

Peel River anticline was mapped by Canol geologist. It was extended by this study of air photos to the north edge of the project area. Some geologists attribute its structure to an underlying reef because of the gentle dips and the bituminous albertite dikes near the axis on Peel River. However, whether it contains a reef or not, the structure was created by compression from the uplift of the Richardson Mountain anticlinorium. Reefs do exist in the area of Peel River anticline and the albertite dikes indicate that fractures opened during folding of the anticline, allowing oil to escape and solidify.

Margery Creek Fault, which underlies Margery Creek anticline was formed by compression from the west. Silurian reef is exposed in the core of the anticline. The fault has thrust Paleozoic eastward over Cretaceous.

Margery Creek dome:

Between Peel River anticline and Margery

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Creek anticline is an outcrop of Ramparts on the axis of an anticline mapped by Canol geologists on Margery Creek. This anticline has been interpretated in this study to be a dome and has no connection with Margery Creek anticline as shown in the Canol Report.

Notes: Closure to the southeast only; closure not necessary if structure contains reefs.

Whirlpool anticline:

Location: 65° 33' lat., 129° 15' long. (on Mountain River)
Surface outcrop: Imperial
Possible reservoir rock: Ft. Creek and/or Ramparts bioherms.

Notes: This structure was drilled without encountering oil, gas or water. Photogeologic study indicates the well was located far down the northeast flank of the structure. Cut lines indicate seismic work has been done on the structure. Pan American Petroleum Corporation holds permit covering the structure.

Lost anticline:

Location: 65° 35' lat., 129° 07' long.
Surface outcrop: Imperial (?), Ft. Creek (?)
Possible reservoir rock: Ft. Creek and/or Ramparts bioherms, Bear Rock.

Notes: Steeply dipping, barely discernible flat irons together with a lack of published information prevents this structure from being accurately mapped on the air photos. May not be an anticline. Pan American Petroleum Corporation holds permit.

West Mountain anticline:

Location: 65° 38' lat., 128° 47' long.
Surface outcrop: Ramparts
Possible reservoir rock: Bear Rock

Notes: This is a steep, elongated anticline that is probably faulted at depth. Cut lines indicate seismic work has been done on the structure.

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Bat Hills:

Location: 65° 47' lat., 128° 37' long.
Surface outcrop: Cretaceous
Possible reservoir rock: Ft. Creek and/or Ramparts bioherms, Bear rock.

Notes: Where Bat Hills anticline has been down-faulted normal to its axis, Paleozoic limestones, that are exposed in the up-thrusted portion of the anticline, have been placed in a favorable structural position.

Arctic Red River anticline:

Location: 65° 35' lat., 131° 00' long.
Surface outcrop: Cretaceous
Possible reservoir rock: Ramparts, Bear rock

Notes: This structure is located between the terminations of the two main synclines that form Peel Plateau. It has gentle dips and appears to go into a monocline type structure on each end where the transition of Arctic Red River syncline to Flat Lake syncline takes place.

Exploration Methods

Canol Report notes that good seismic reflections are obtained from the reef limestone. Airborne magnetometer and gravimeter may indicate more basement controlled fault blocks of the Franklin Mountain type, not only in Franklin Mountains, but across the project area on the north flank of Arctic Red River to meet demand.

Respectfully submitted,
July 15, 1958.

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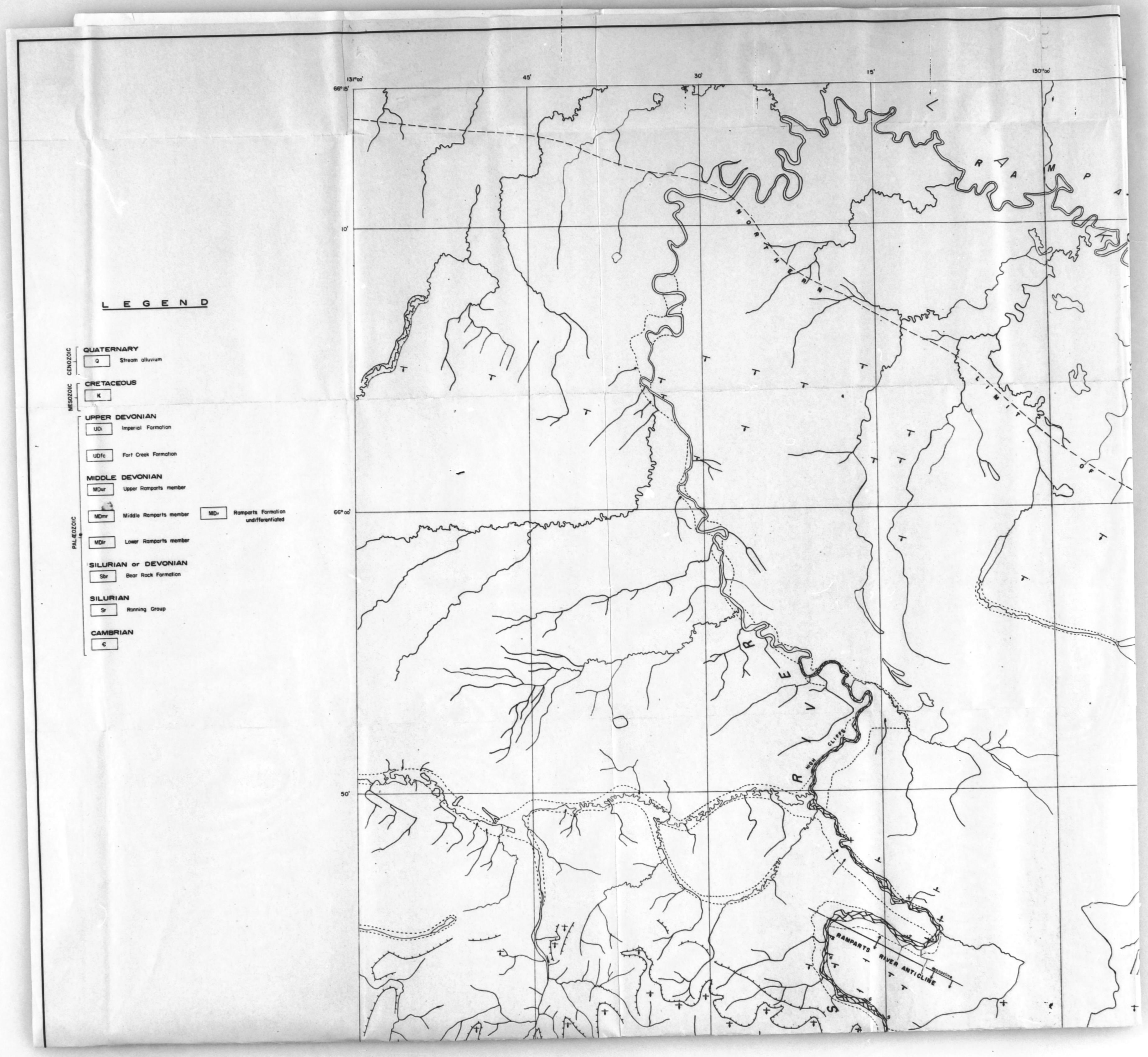
Dip based on topographic feature
Dip component
Dip taken from published map
Bedding horizontal
Dip groups: less than 5°, 5°-15°, 15°-30°, 30°-60°, 60°+
Bedding vertical
Bedding overturned
Dip doubtful
Formation boundary
Fault ascertained
Fault conjectural
Anticline plunging west
Syncline plunging west
Anticline with overturned north flank
Syncline with overturned south flank
Anticline or Syncline conjectural
Structural high of Anticline
Structural low of Syncline
Cut line
Note: Planimetry derived from uncontrolled R.C.A.F. mosaics and maps supplied by Pan American Pet. Corp.
ARCTIC RED RIVER SYNCLINE
ARCTIC RED RIVER ANTICLINE
RAMPARTS RIVER ANTICLINE
FLAT LAKE SYNCL
Flat Lake
ARCTIC RED RIVER THRUST
MACKENZIE
monocline
dikes
no photos
50'
40'
30'
20'
65° 15'
131°00'
45'
30'
15'
130°00'
PHOTO
PEEL PL
3
2
1


LEGEND
CENOZOIC
QUATERNARY
Q Stream alluvium
MESOZOIC
CRETACEOUS
K
PALÆOZOIC
UPPER DEVONIAN
UDi Imperial Formation
UDfc Fort Creek Formation
MIDDLE DEVONIAN
MDur Upper Ramparts member
MDmr Middle Ramparts member
MDr Ramparts Formation undifferentiated
MDlr Lower Ramparts member
SILURIAN or DEVONIAN
Sbr Bear Rock Formation
SILURIAN
Sr Ronning Group
CAMBRIAN
€
131°00'
45'
30'
15'
130°00'
66°15'
10'
66°00'
50'
RAMPARTS RIVER ANTICLINE

PHOTOGEOLOGIC RECONNAISSANCE

PEEL PLATEAU PROJECT AREA

NORTHWEST TERRITORIES

Scale

60-2-6-6

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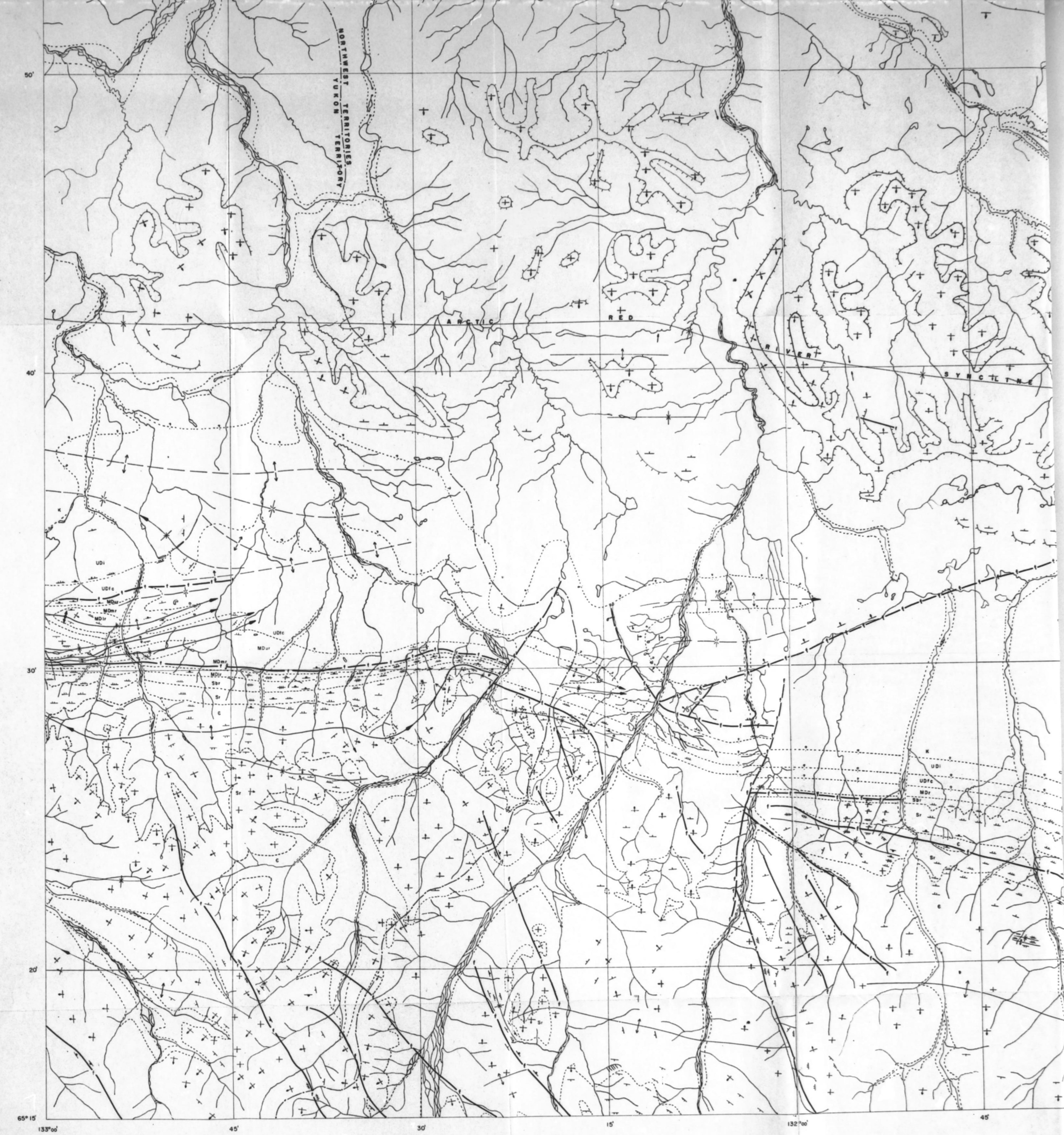
Calgary, Alberta
1958

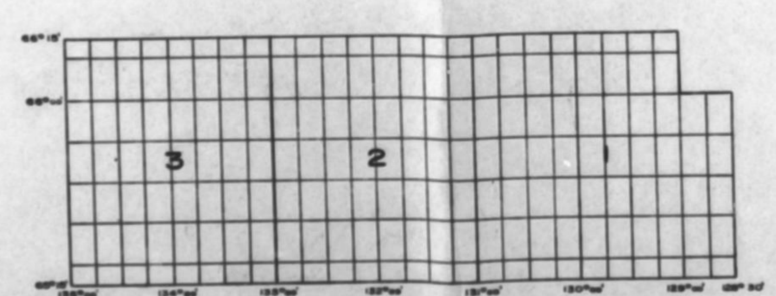
SHEET 1


SHEET 1
15'
130°00'
45'
30'
15'
129°00'
66°15'
10'
66°00'
50'
RAMPARTS
RIVER
HUME RIVER
AREA
Mackenzie
LIMIT OF THE PEEL PLATEAU
PEEL RIVER
RIVER
BEAVERTAIL MTN
BAT HILLS
RIVER ANTICLINE



Dip based on topographic feature
Dip component
Dip taken from published map
Bedding horizontal
Dip groups: less than 5°, 5°-15°, 15°-30°, 30°-60°, 60°+
Bedding vertical
Bedding overturned
Dip doubtful
Formation boundary
Fault ascertained
Fault conjectural
Anticline plunging west
Syncline plunging west
Anticline with overturned north flank
Syncline with overturned south flank
Anticline or Syncline conjectural
Structural high of Anticline
Structural low of Syncline

Note: Planimetry derived from uncontrolled R.C.A.F. mosaics and maps supplied by Pan American Pet. Corp.



PHOTOGEOLOGIC RECONNAISSANCE

PEEL PLATEAU PROJECT AREA

NORTHWEST TERRITORIES

Scale: 1" = 8000'

60-2-6-6

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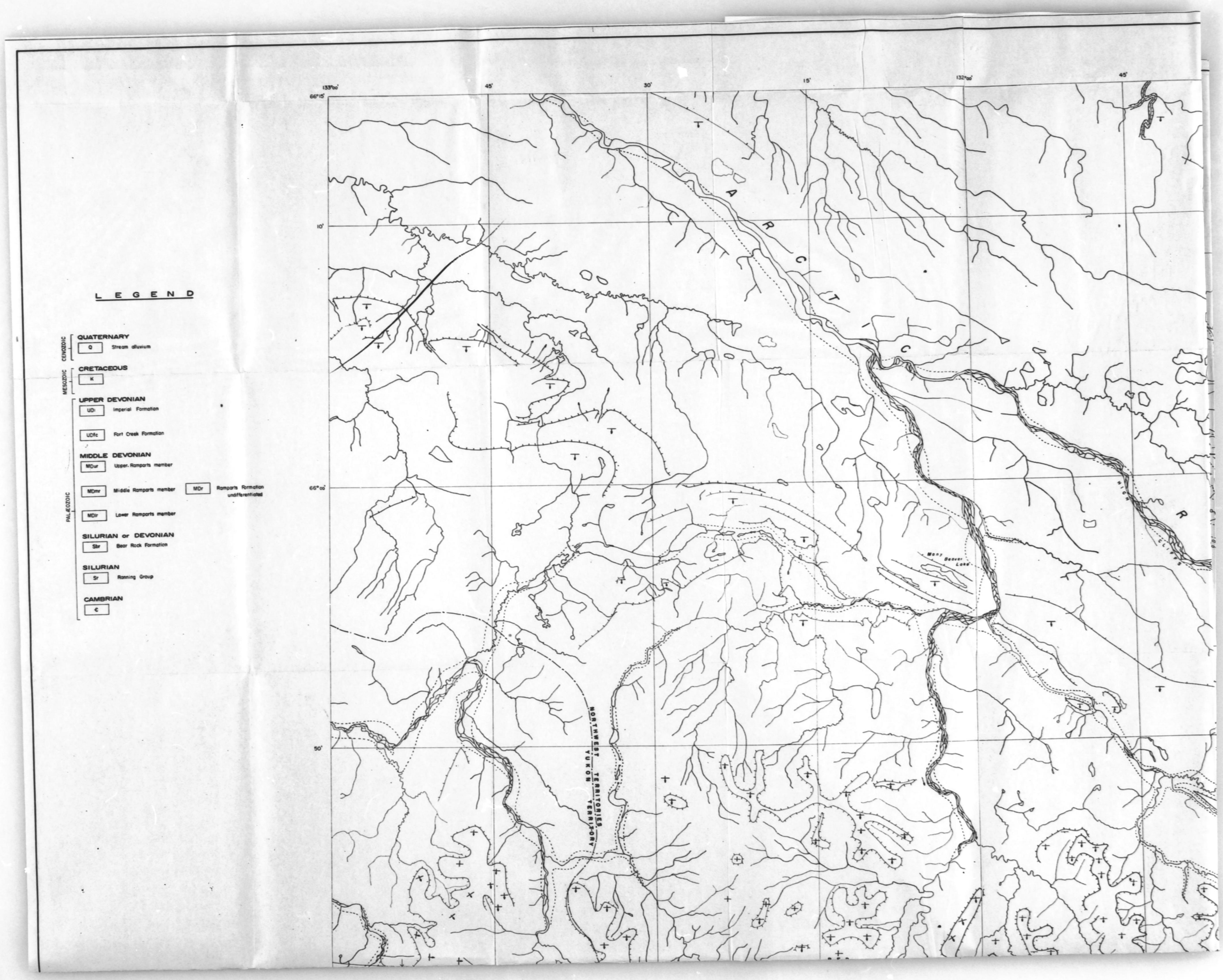
1958

Sheet 2


LEGEND
CENOZOIC
QUATERNARY
Q Stream alluvium
MESOZOIC
CRETACEOUS
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PALÆOZOIC
UPPER DEVONIAN
UDi Imperial Formation
UDfc Fort Creek Formation
MIDDLE DEVONIAN
MDur Upper Ramparts member
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MDr Ramparts Formation undifferentiated
MDlr Lower Ramparts member
SILURIAN or DEVONIAN
Sbr Bear Rock Formation
SILURIAN
Sr Ronning Group
CAMBRIAN
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133°00'
45'
30'
15'
132°00'
45'
66°15'
10'
66°00'
50'
A R C T I C
R
Many Beaver Lake
NORTHWEST TERRITORIES
YUKON TERRITORY

PHOTOGEOLOGIC RECONNAISSANCE

PEEL PLATEAU PROJECT AREA

NORTHWEST TERRITORIES

Scale: 1" = 8000'

60-2-6-6

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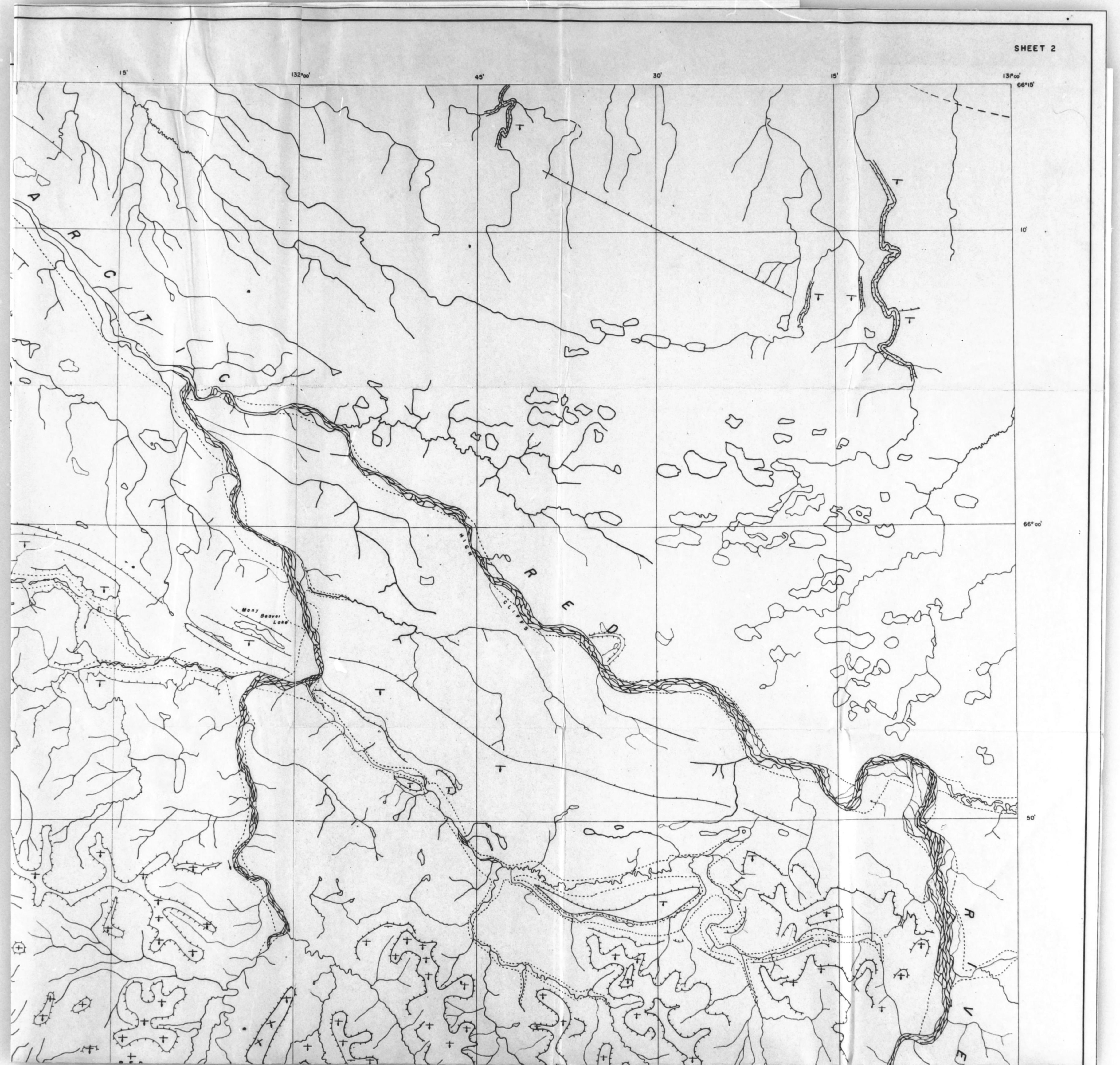
1958

Sheet 2

97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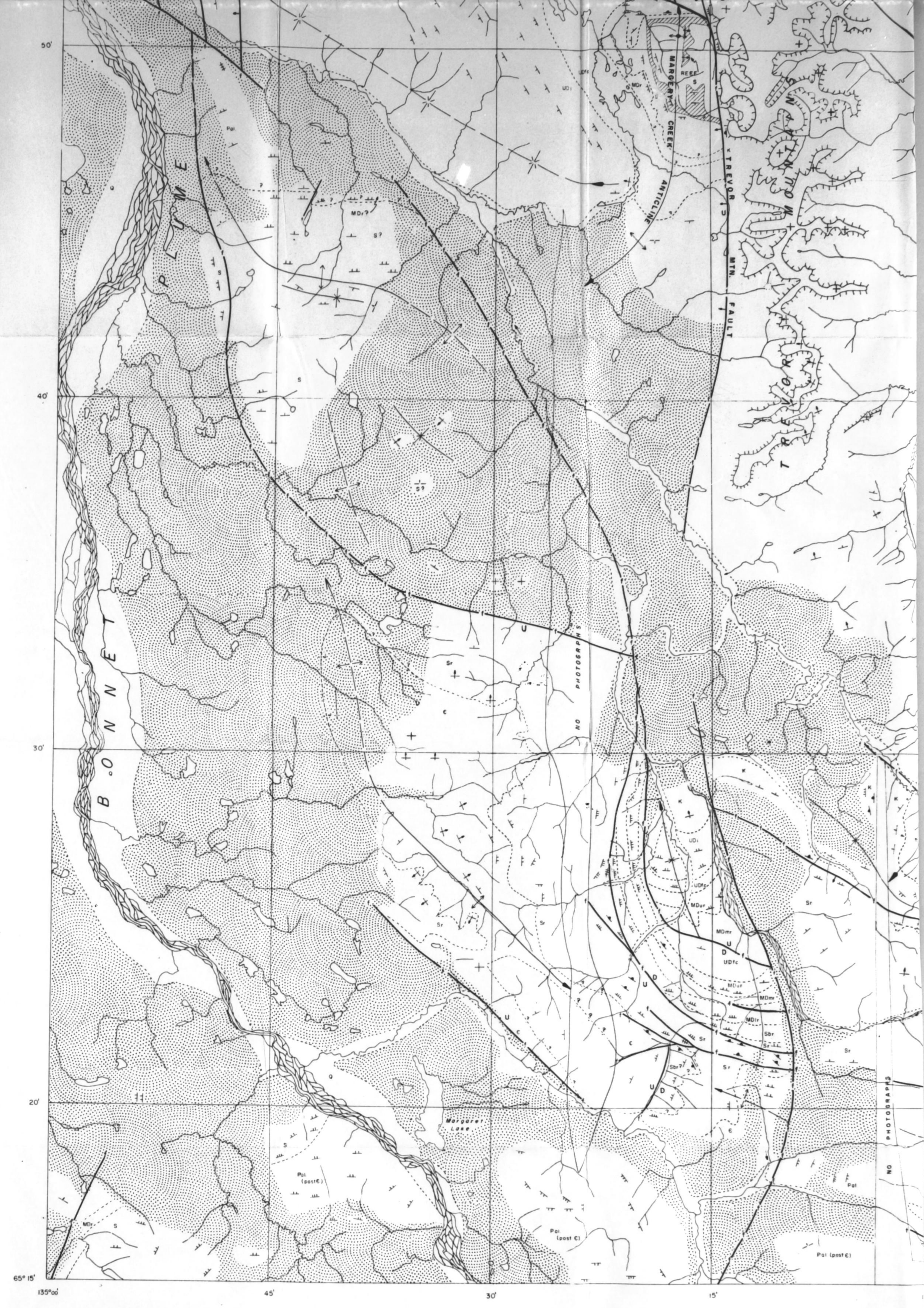
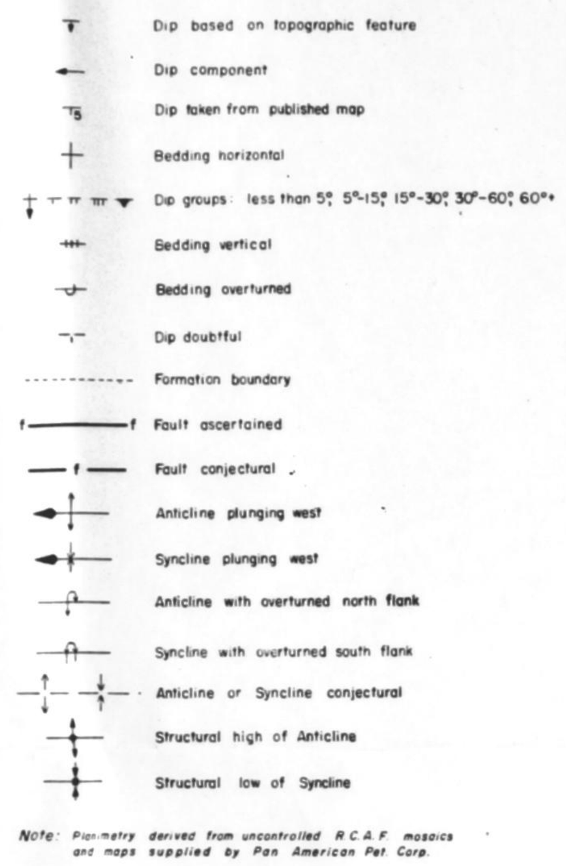
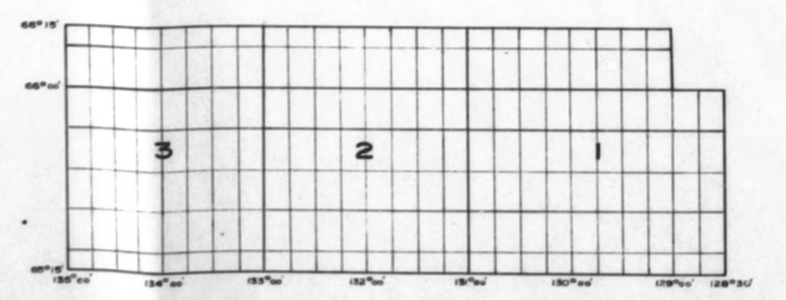
R E D
R I V E R
Many Beaver Lake
HIGH CLIFFS







PHOTOGEOLOGIC

PEEL PLATEAU

NORTHWEST

Prep

J.G. MUR

Calgar

L E G E N D

CENOZOIC

QUATERNARY

Q — Stream alluvium

Surficial deposits

TERTIARY

T

MESOZOIC

CRETACEOUS

K

PALÆOZOIC

UPPER DEVONIAN

UDi — Imperial Formation

UDfc — Fort Creek Formation

MIDDLE DEVONIAN

MDur — Upper Ramparts member

MDmr — Middle Ramparts member

MDlr — Lower Ramparts member

MDr — Ramparts Formation undifferentiated.

SILURIAN or DEVONIAN

Sbr — Bear Rock Formation

SILURIAN

Sr — Ronning Group

S — Silurian undifferentiated

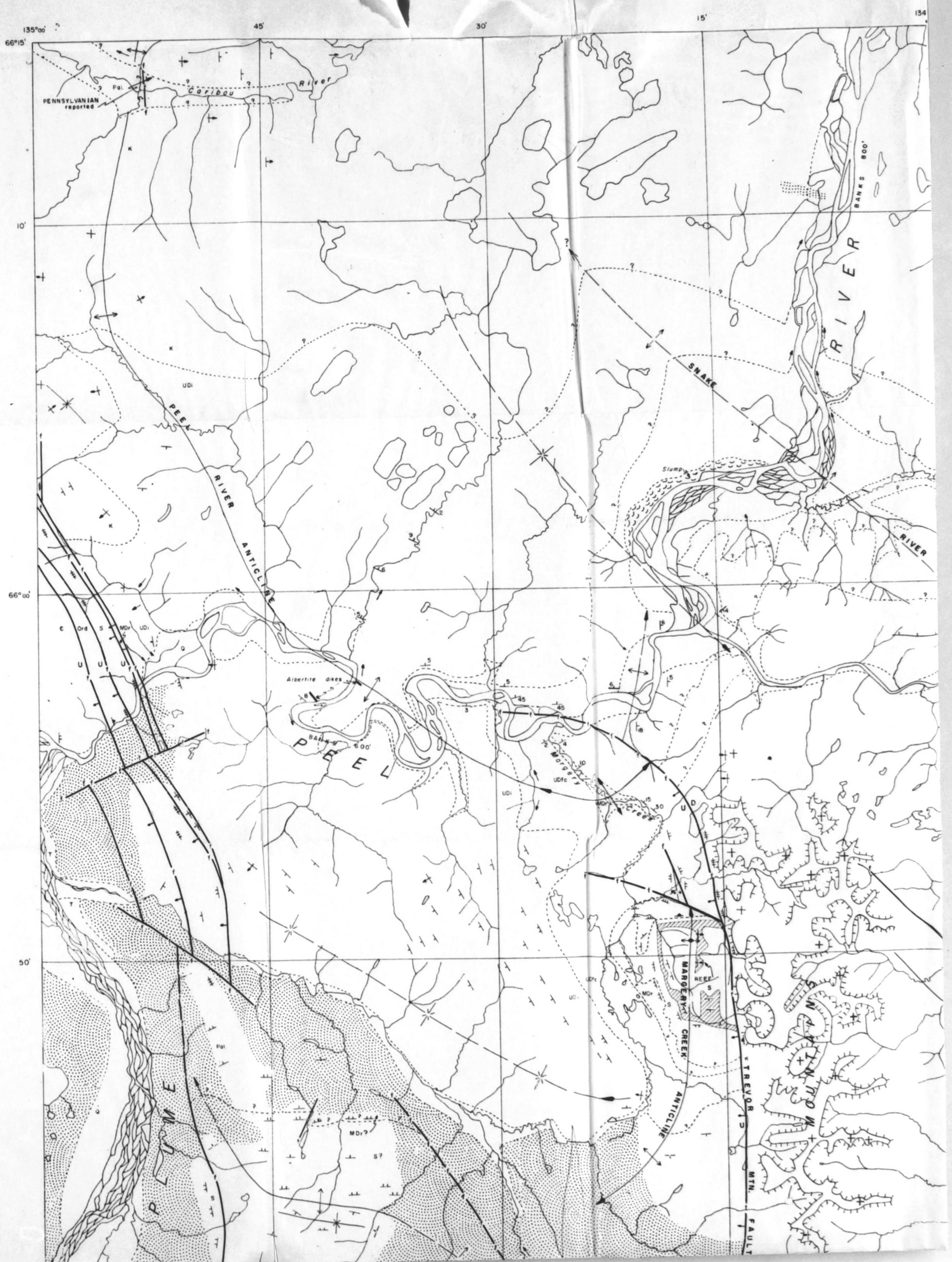
ORDOVICIAN

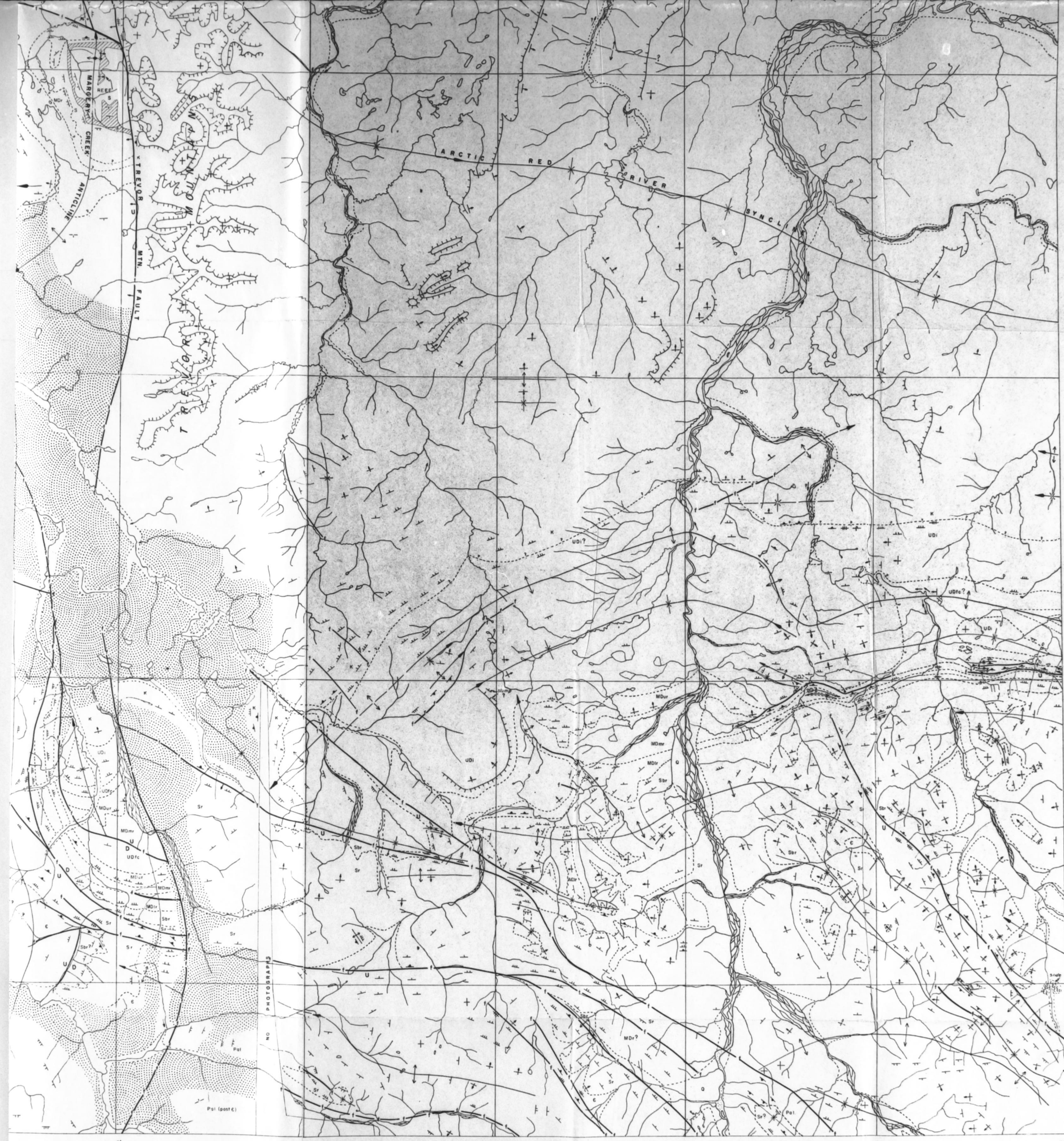
Ord

CAMBRIAN

€

Pal — Paleozoic undifferentiated — in some areas covered by surficial deposits.





PHOTOGEOLOGIC RECONNAISSANCE

PEEL PLATEAU PROJECT AREA

NORTHWEST TERRITORIES

Scale 1" = 8000

60-2-6-6

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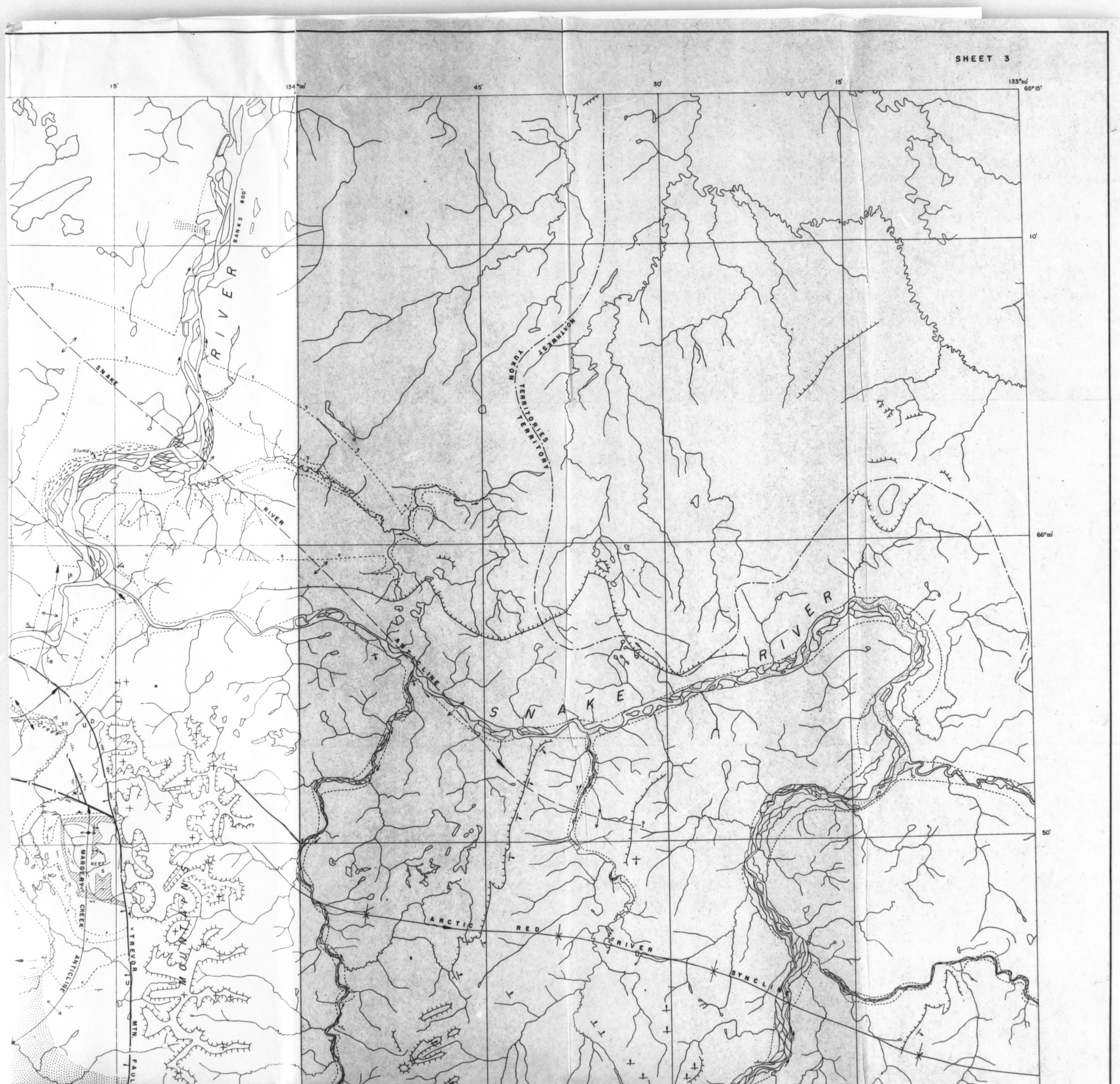
J.G. MURPHY, P. Eng.
Calgary, Alberta
1958

SHEET 3


SHEET 3
15'
134°00'
45'
30'
15'
133°00'
66°15'
10'
66°00'
50'
SNAKE RIVER
RIVER
SNAKE
NORTHWEST TERRITORIES
YUKON TERRITORY
ARCTIC RED RIVER SYNCLINE
TREVOR MTN. FAULT
ANTICLINE
CREEK

LEGEND

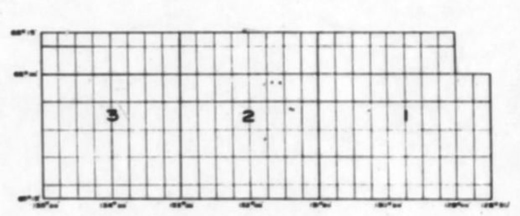
CENOZOIC
- **QUATERNARY**
  - Q — Stream alluvium
  - Surficial deposits
- **TERTIARY**
  - T

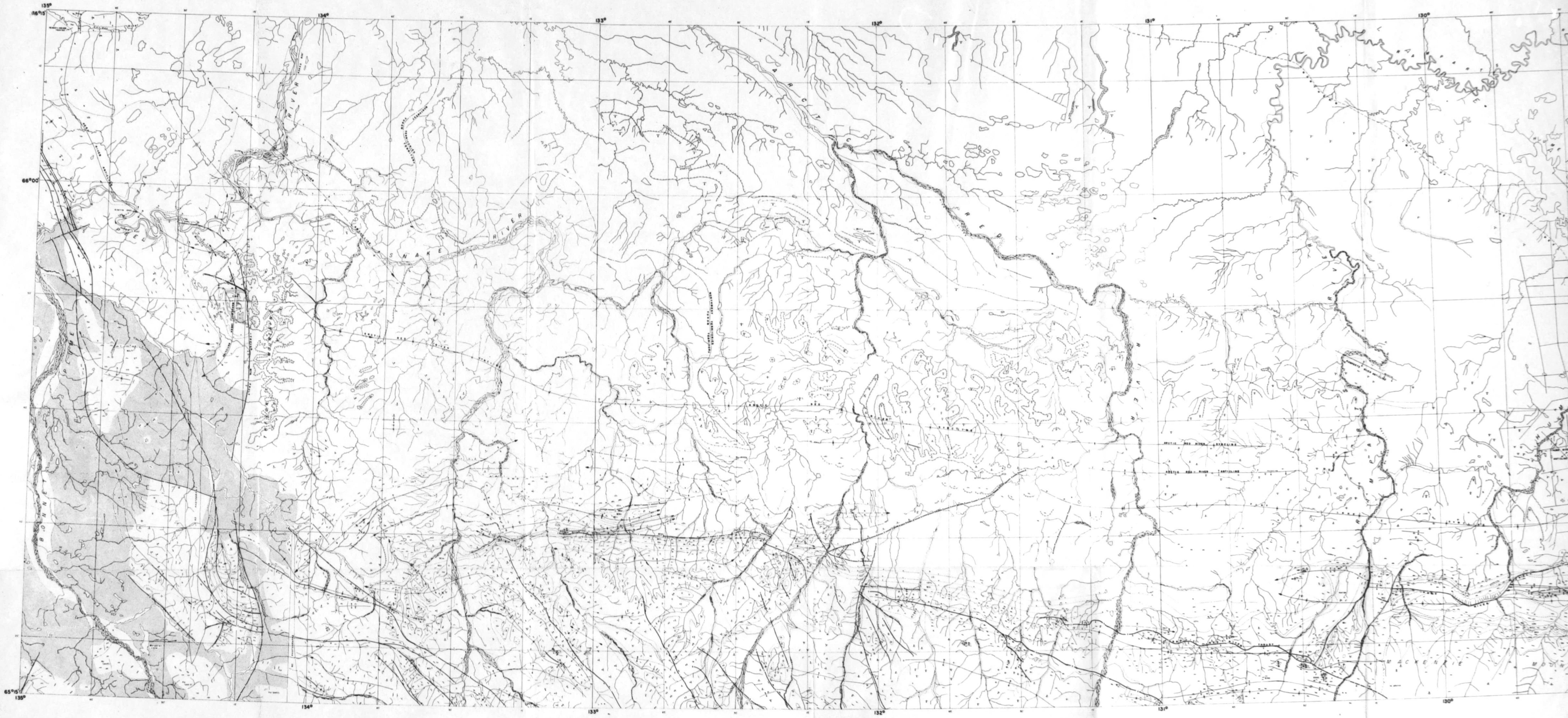
MESOZOIC
- **CRETACEOUS**
  - K

PALAEOZOIC
- **UPPER DEVONIAN**
  - UDi — Imperial Formation
  - UDfc — Fort Creek Formation
- **MIDDLE DEVONIAN**
  - MDur — Upper Ramparts member
  - MDmr — Middle Ramparts member
  - MDlr — Lower Ramparts member
  - MDr — Ramparts Formation undifferentiated
- **SILURIAN or DEVONIAN**
  - Sbr — Bear Rock Formation
- **SILURIAN**
  - Sr — Ronning Group
  - S — Silurian undifferentiated
- **ORDOVICIAN**
  - Ord
- **CAMBRIAN**
  - €
- Pal — Paleozoic undifferentiated — in some areas covered by surficial deposits.

Dip based on topographic feature
Dip component
Dip taken from published map
Bedding horizontal
Dip groups: less than 5°, 5°-15°, 15°-30°, 30°-60°, 60°+
Bedding vertical
Bedding overturned
Dip doubtful
Formation boundary
Fault ascertained
Fault conjectural
Anticline plunging west
Syncline plunging west
Anticline with overturned north flank
Syncline with overturned south flank
Anticline or Syncline conjectural
Structural high of Anticline
Structural low of Syncline

Note: Planimetry derived from uncontrolled R.C.A.F. mosaics and maps supplied by Pan American Pet Corp.





PHOTOGEOLOGIC RECONNAISSANCE

PEEL PLATEAU PROJECT AREA

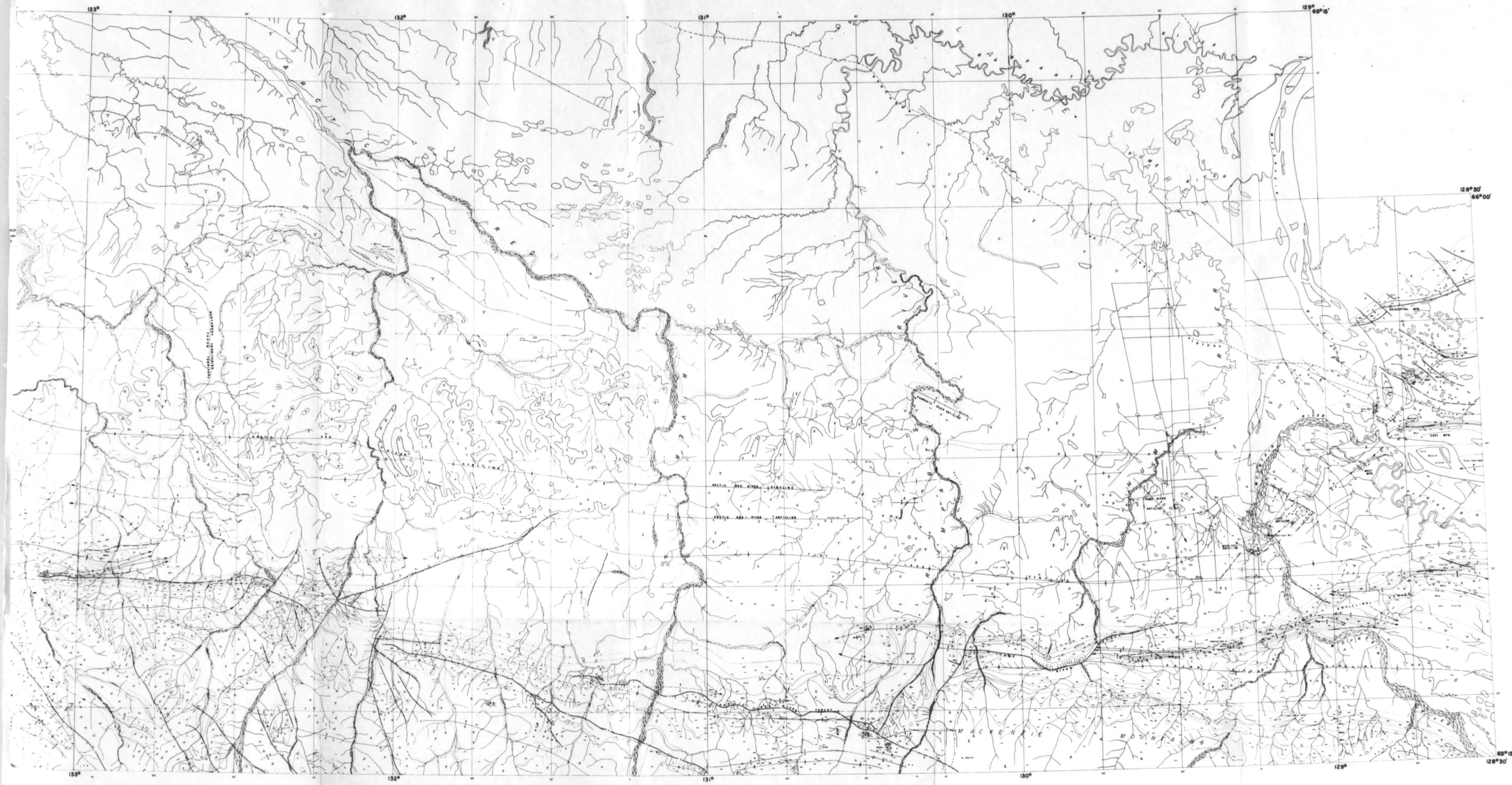
NORTHWEST TERRITORIES

1 INCH — 4 MILES

60-2-6-6

Prepared by
J. G. MURPHY, P. Eng.
Calgary, Alberta

1958



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