

Figure 1. Northeast Carcajou Canyon map area (NTS 96-DNE) showing seismic lines on record with the National Energy Board that were used to augment the bedrock geology interpretation. Line names are provided in the data files.

**Abstract**

The northeast quadrant of the Carcajou Canyon map area (NTS 96-D) straddles the Mackenzie Mountains and Mackenzie Plain, Northwest Territories, rising from a relatively flat, low-lying plain in the northeast to mountainous terrain in the southwest. Much of the Mackenzie Plain is here underlain by flat or very gently folded Cretaceous to Paleocene siliciclastic strata. Exposed in the Mackenzie Mountains include siliciclastic and carbonate strata ranging in age from Neoproterozoic to Devonian. These older strata have been brought to the surface along compressional faults and in the cores of anticlines associated with Cordilleran deformation. Structural features are dominated by the northwest trend, the exception being the northeast-trending Gambell Fault. Public-domain seismic-reflection lines, archived with the National Energy Board, help constrain the location of contacts between sparsely exposed Cretaceous units, petroleum exploration by private industry in the area targets Cambrian or Devonian strata in the subsurface of the Mackenzie Plain.

**Résumé**

Le quadrant nord-est de la région cartographique de Carcajou Canyon (SNRC 96-D) chevauche les monts Mackenzie et la plaine du Mackenzie (Territoires du Nord-Ouest), où le terrain s'élève depuis une basse plaine relativement plane, au nord-est, à un terrain montagneux au sud-ouest. La majeure partie de la plaine du Mackenzie repose sur des strates silicoclastiques du Crétacé au Paléocène. Exposées dans les montagnes Mackenzie incluent des strates silicoclastiques et carbonatées s'échelonnant en âge du Néoproterozoïque au Dévonien. Ces strates plus anciennes ont été amenées à la surface le long de failles de compression et dans le cœur d'anticlinaux associés à la déformation cordillère. La tendance des entités structurales est à prédominance nord-ouest, à l'exception de la faille de Gambell de direction nord-est. Des profils de sismique exploratoire du domaine public, archivés par l'Office national de l'énergie, ont aidé à circonscrire les contacts des unités du Crétacé représentées en affleurement. Dans la région, l'exploration pétrolière par l'industrie a ciblé les strates du Cambrien ou du Dévonien enfouies dans les profondeurs de la plaine du Mackenzie.

REGION	WATER	WATER
CGM 101	CGM 100	CGM 91
CGM 94	CGM 95	CGM 92
CGM 97	CGM 96	CGM 93

National Topographic System reference and index to adjoining published Geological Survey of Canada maps

**Cover illustration**

View looking east along the Rouge Mountain River from the flank of the Rouge Mountain anticline. Red and orange rocks in the foreground belong to Proterozoic Little Dal Group. The yellow exposure downstream is locally intrastratigraphic Franklin Mountain Formation. Photograph by K.M. Fallas, 2012-146

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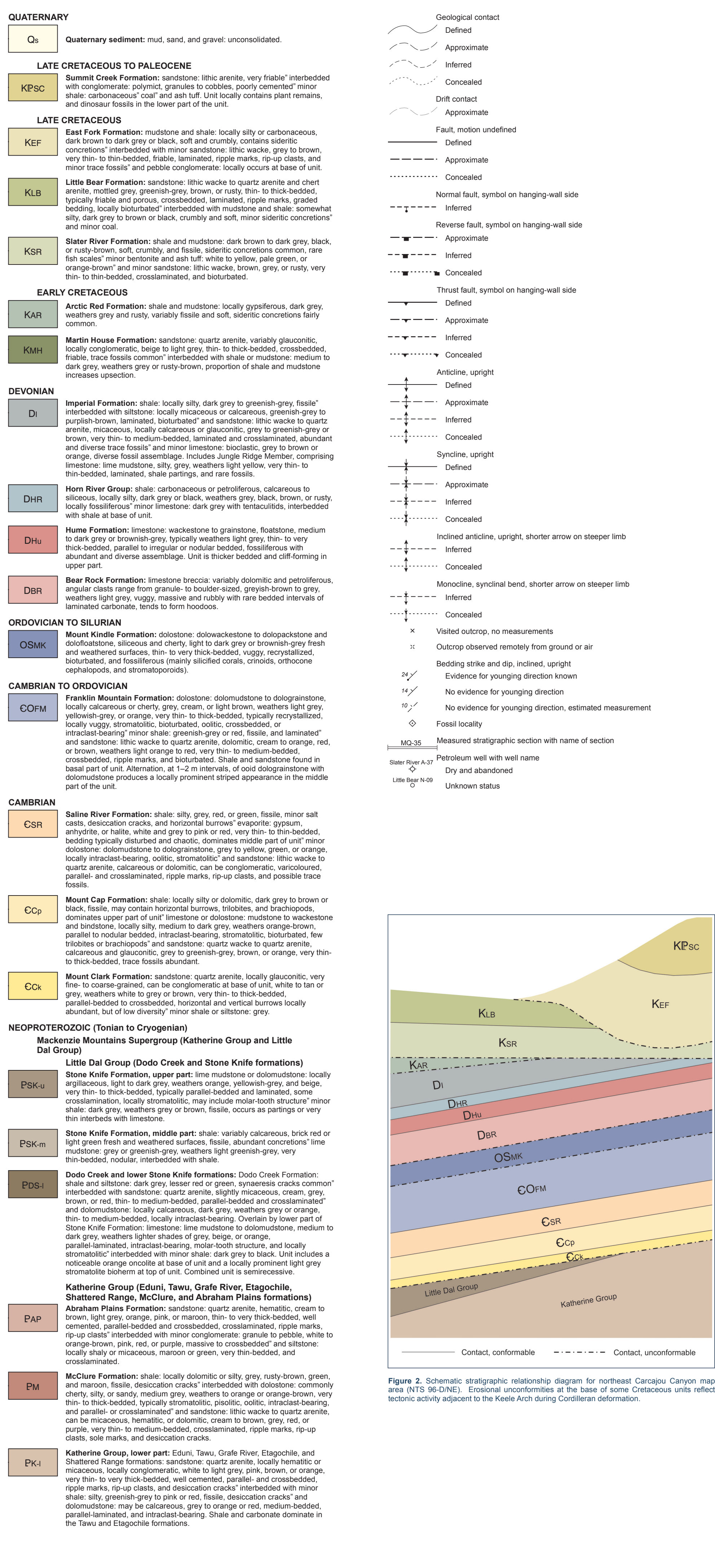
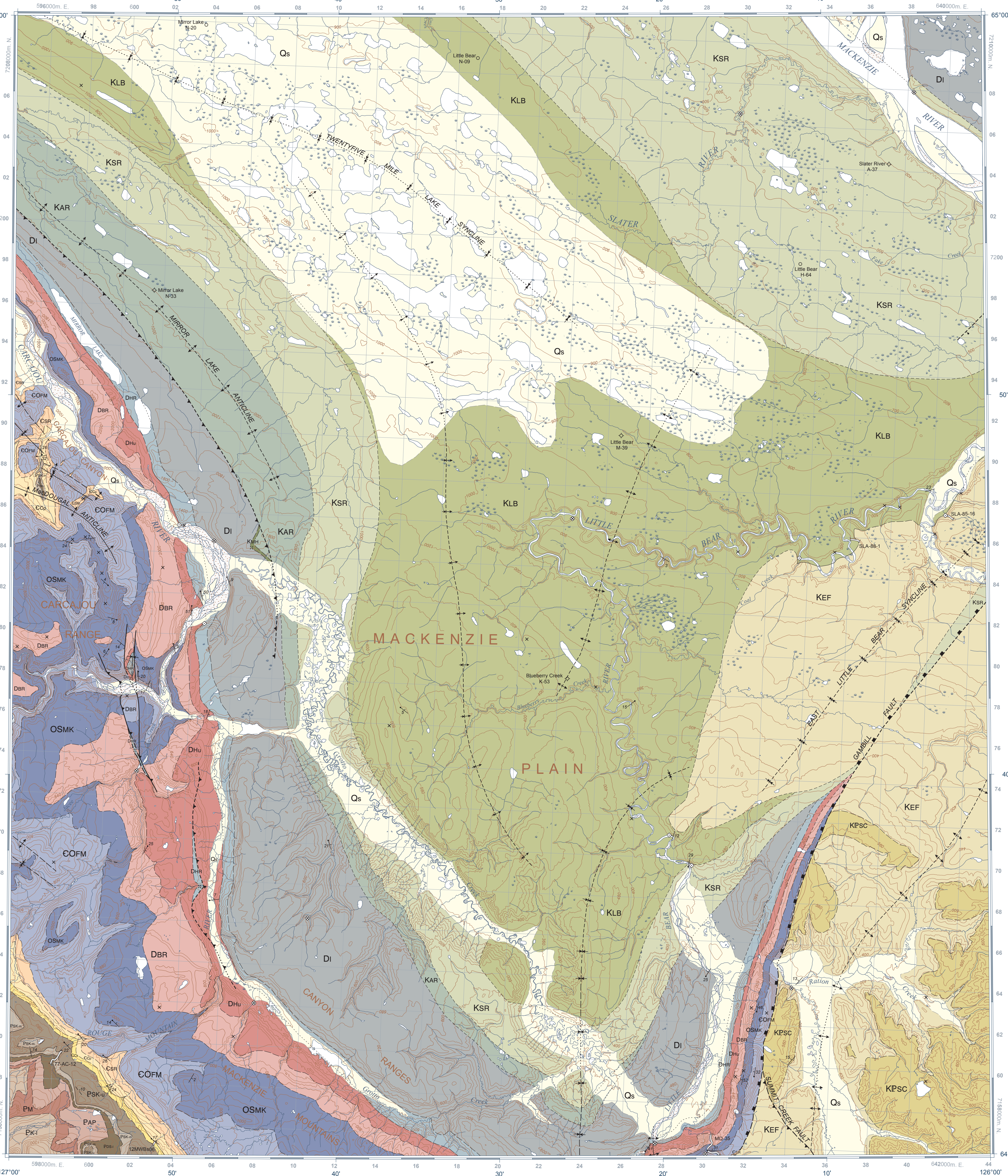


## CANADIAN GEOSCIENCE MAP 95

### GEOLOGY

# CARCAJOU CANYON (NORTHEAST)

Northwest Territories  
1:100 000



**NOTES**

The authors have updated and revised map unit terminology from the Operation Norman map (Aiken et al., 1974). In general, terminology for Cambrian units is that of Dixon and Stasiuk (1998) with modifications by Fallas and MacNaughton (2012). Silurian and Devonian usage follows that of Morrow (1991), and Cretaceous to Paleocene formation names are those of Dixon (1999). Neoproterozoic to Ordovician units have recently undergone revision to their terminology, as outlined below.

Recent stratigraphic work in the Mackenzie Mountains has formalized the Mackenzie Mountains Supergroup and revised its formation-level nomenclature. Within the Katherine Group, the Eduli, Tawu, Grate River, Etapochle, and Shattered Range formations of Long and Turner (2012) correspond to the lower part of the Katherine Group as shown on the GSC map for Carcajou Canyon (Aiken et al., 1974), and to the K1 to K5 divisions of Aiken et al. (1978) and Long et al. (2008). Delineation of these new formations depends on the ability to recognize the recessive Tawu and Etapochle formations. These formations are seldom exposed in the mapping area and so the five lower formations of the Katherine Group were grouped during mapping. The McClure and Abraham Plains formations correspond to the upper Katherine Group on the Carcajou Canyon map (Aiken et al., 1974), and to the K6 and K7 divisions of Aiken et al. (1978) and Long et al. (2008).

The Little Dal Group previously was mapped in this region as two units: H5 and Little Dal Formation (Aiken et al., 1974). Regionally, those two units were reorganized into seven informal units of formation scale by Aiken (1981). In the present mapping area, Aiken's terminology can be applied as follows: the lower part of H5 corresponds to the "Mudcracked formation" the upper part of H5 and the Little Dal Formation correspond to the "Basal Assemblage". Most recently, Turner and Long (2012) have formalized the internal stratigraphy of the Little Dal Group. Their nomenclature applies as follows to the present study area: the Mudcracked formation is now the Dodo Creek Formation; the Basal Assemblage is now the Stone Knife Formation, consisting of four informal members (1, 2, 3, and 4). In the present series of maps the Dodo Creek Formation and the lower Stone Knife Formation (equivalent to its member 1) have been combined due to similarity of weathering profile and colour. Our middle Stone Knife Formation corresponds to the lower part of member 2 (typically a bright red shale in this area), and the upper Stone Knife Formation encompasses the upper part of member 2 (carbonate dominated).

Previous work by the Geological Survey of Canada in northeast Carcajou Canyon map area (Aiken and Cook, 1974) subdivided the Cambro-Ordovician Franklin Mountain Formation into three informal units. In ascending order they are: Cyclic member, Rhythmic member, and Cherty member (Norford and Macquenn, 1975). On the present maps, these older unit names correspond, in ascending order, to informal lower, middle, and upper members of the Franklin Mountain Formation. These lower, middle, and upper members correspond to units 1, 2, and 3 of the Franklin Mountain Formation described by Turner (2011).

For detailed information on surficial deposits, here shown as "Quaternary sediment" see Oak-Rootin and Hughes (2002).

The names Summit Creek Fault, Twentyfive Mile Lake syncline, Mirror Lake anticline, and East Little Bear syncline have been introduced to facilitate discussion of these structural features. The names Gambell Fault and MacNaughton anticline have been incorporated from the Carcajou Canyon map (Aiken et al., 1974). Cordilleran deformation in this map area has generated folds and thrust faults interpreted to be detached within Proterozoic, Cambrian, or Devonian strata. The Gambell Fault is represented as a reverse fault on the basis of seismic-reflection data showing the development of a sail wall above steep faults in Proterozoic strata (MacLean and Cook, 1999).

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## CANADIAN GEOSCIENCE MAP 95

### GEOLOGY

# CARCAJOU CANYON (NORTHEAST)

Northwest Territories  
1:100 000



Joint initiative of the Geological Survey of Canada and the Northwest Territories Geoscience Office, conducted under the auspices of the Mackenzie Delta and Corridor Project as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) Program.

Logistical support provided by the Polar Continental Shelf Program as part of its mandate to promote scientific research in the Canadian North. PCSP 02509, 01310, 05411, and 09012.

Map projection: Universal Transverse Mercator, zone 9, North American Datum 1983.

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.

Elevations above mean sea level are expressed in feet north of 64°45' and metres south of 64°45'.

Some geographic names on this map are not official.

Mean magnetic declination 2013, 23°9'E, decreasing 30' annually. Readings vary from 23°18'E in the NW corner of the map to 22°59'E in the SE corner of the map.

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional features not portrayed on this map. See documentation accompanying the data.

Additional references are included in the map information document.

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