

Stratiform coarse-grained and hydrothermal dolomite in Franklin Mountain Formation of northern Mackenzie Mountains (NTS 106G/05, 06)

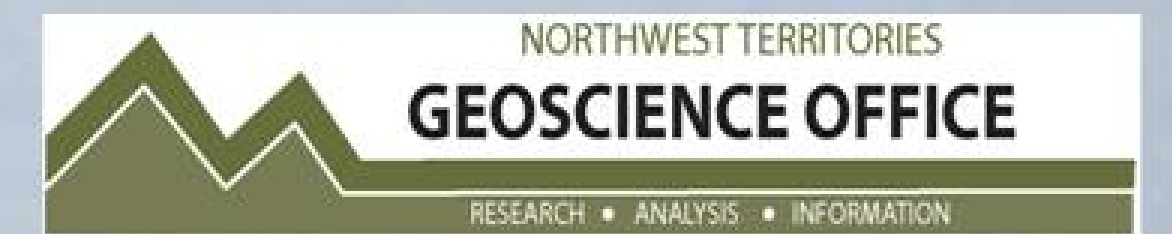


Regional Geoscience Studies
& Petroleum Potential,
Peel Plateau & Plain

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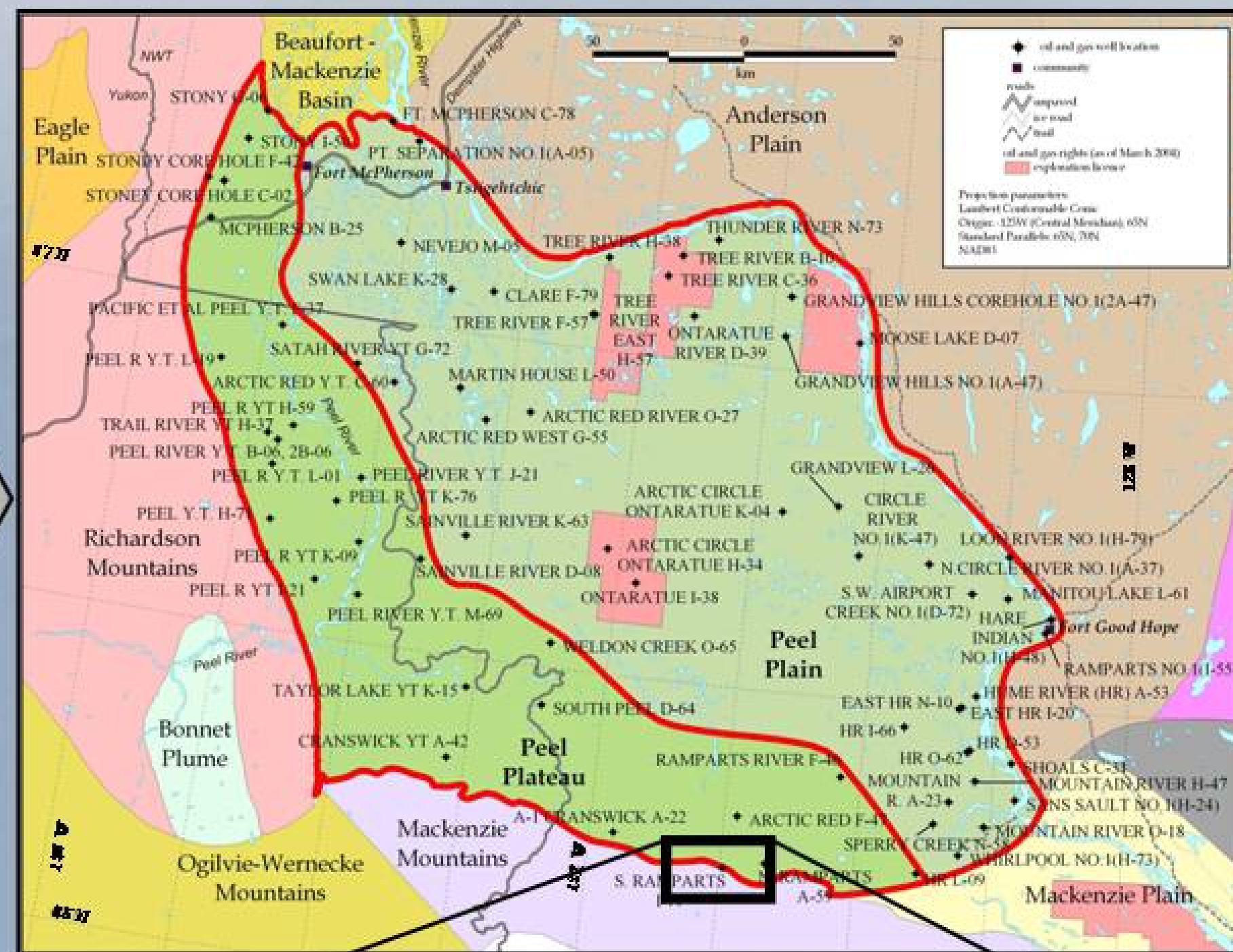
¹ Northwest Territories Geoscience Office

² Geological Survey of Canada - Pacific



STUDY AREA, INTRODUCTION and CONTINUING WORK

Physiographic / exploration regions in northwest NWT and northeast Yukon; Peel Plateau and Plain in red outline. Map area in figure below is indicated by black box.

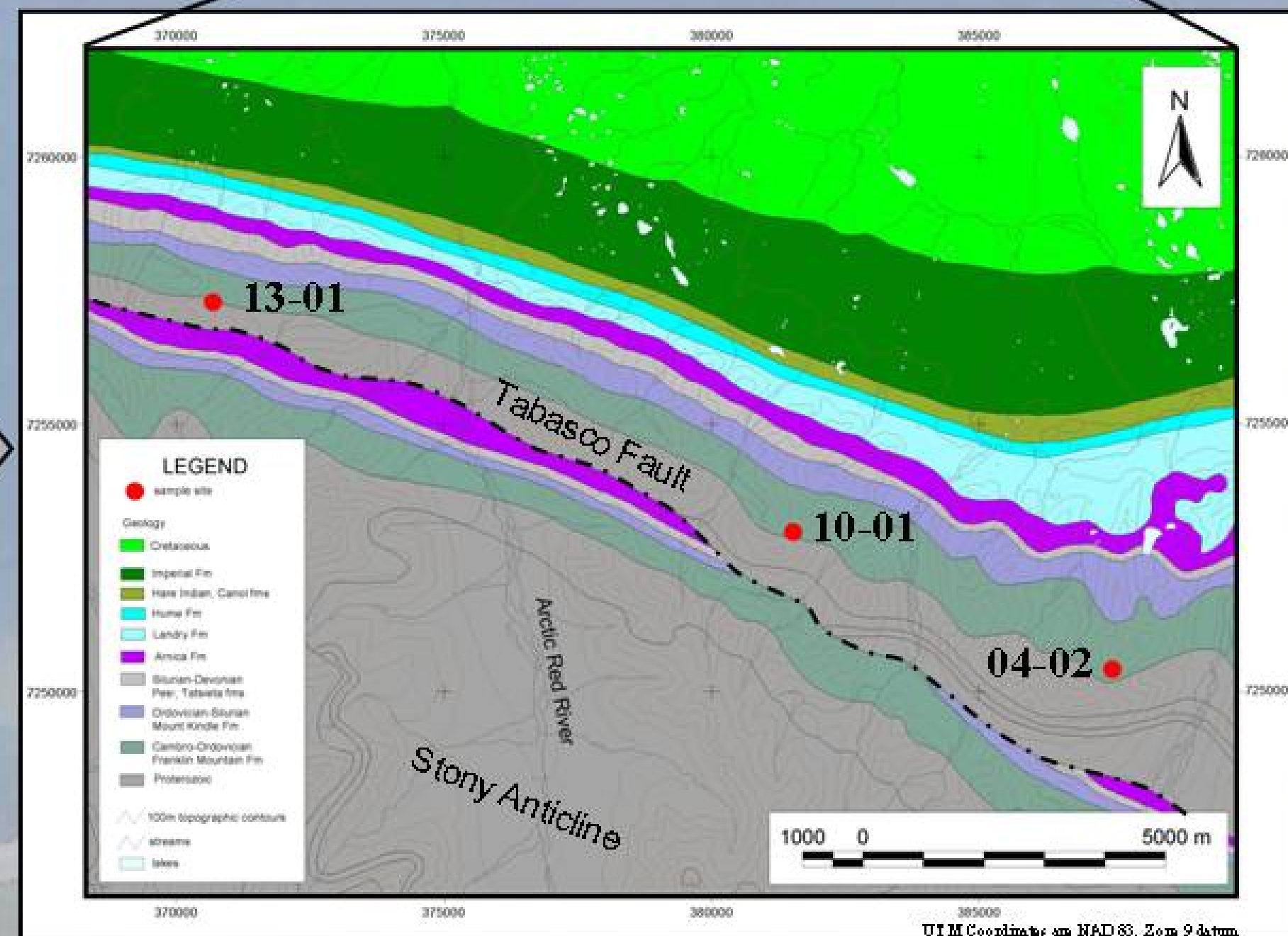


This poster presents observations and analytical data from samples obtained during stratigraphic studies in northern Mackenzie Mountains, at the margin of Peel Plateau. In the study area, Cambrian to Ordovician Franklin Mountain Formation is generally a silty, laminated dolostone interpreted to be deposited in a shallow water setting on a passive continental margin (e.g. Gabrielse, 1967). At several locations at the front of Mackenzie Mountains, we have observed medium- to coarse-grained, vuggy, light grey to white dolomite that occurs in apparently stratiform units, within otherwise tight Franklin Mountain Formation. The occurrences described here lie at about 130-250 m above the base Franklin Mountain Formation, which unconformably overlies Proterozoic Katherine Group quartzite. The dolomitization is not associated with obvious faults, but these may be present. On a regional scale the dolomitization occurs in the hanging wall of a regional back-thrust (Tabasco Fault) on the north flank of Stony Anticline.

Because the basal contact of Franklin Mountain Formation is erosional, it is difficult to tell whether these three zones of vuggy coarse-grained dolomite occur at the same stratigraphic horizon within the formation. More work is required to understand the genesis and significance of these porous dolostones, but the apparent continuity suggests there may be potential for significant reservoir possibilities in the subsurface.

Results from further analysis will form part of the multi-disciplinary "Regional Geoscience Studies and Petroleum Potential, Peel Plateau and Plain" being carried out by the Northwest Territories Geoscience Office, Yukon Geological Survey, and Geological Survey of Canada.

The three sample sites are in the Arctic Red River area, along a strike length of about 17 km.



SAMPLE 06LP-04-02



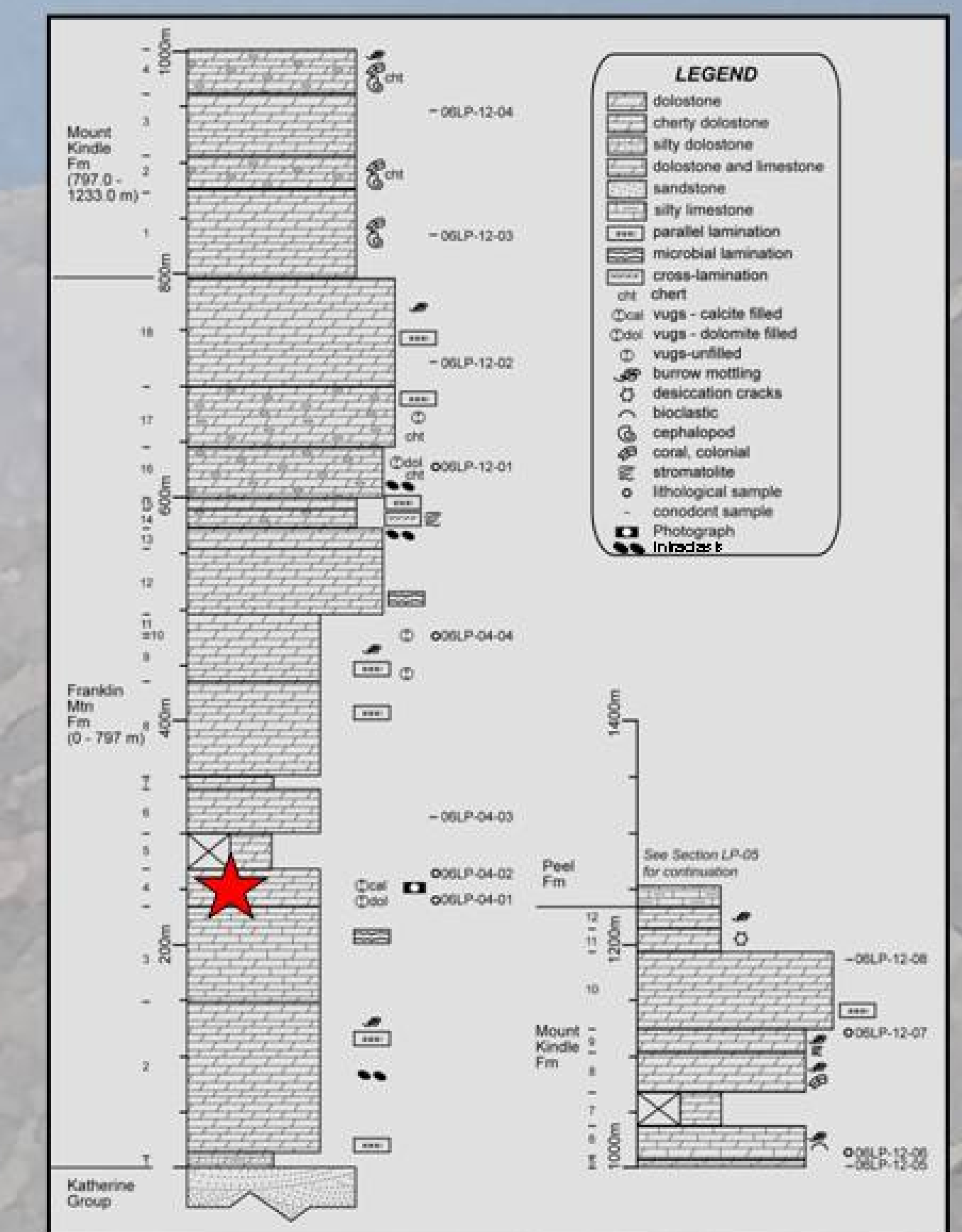
06LP-04-02 sample was collected 246.5 m stratigraphically above the Franklin Mountain-Proterozoic contact. A 39 m thick interval of mainly thin bedded fine- to medium-grained dolostone, with some interbeds of coarse-grained vuggy dolomite is present. The interval is overlain by a 31.5 m covered interval that could possibly host a fault zone. View to south, boulder in middle front of photo is about 50 cm high.



04-02: Vuggy weathering pattern in outcrop of coarse-grained dolomite. Hammer head is 15 cm long.



04-02: Core sample was analyzed to have 9.4% porosity and 1.07 millidarcies permeability. Note fractures (one indicated by arrow). Bar scale in cm.



Measured strata at Section LP-04; Rumbly Creek Ridge. Franklin Mountain Formation is 797 m thick. The interval with vuggy coarse-grained dolomite is #4 (indicated by red star).

SAMPLE 06LP-13-01



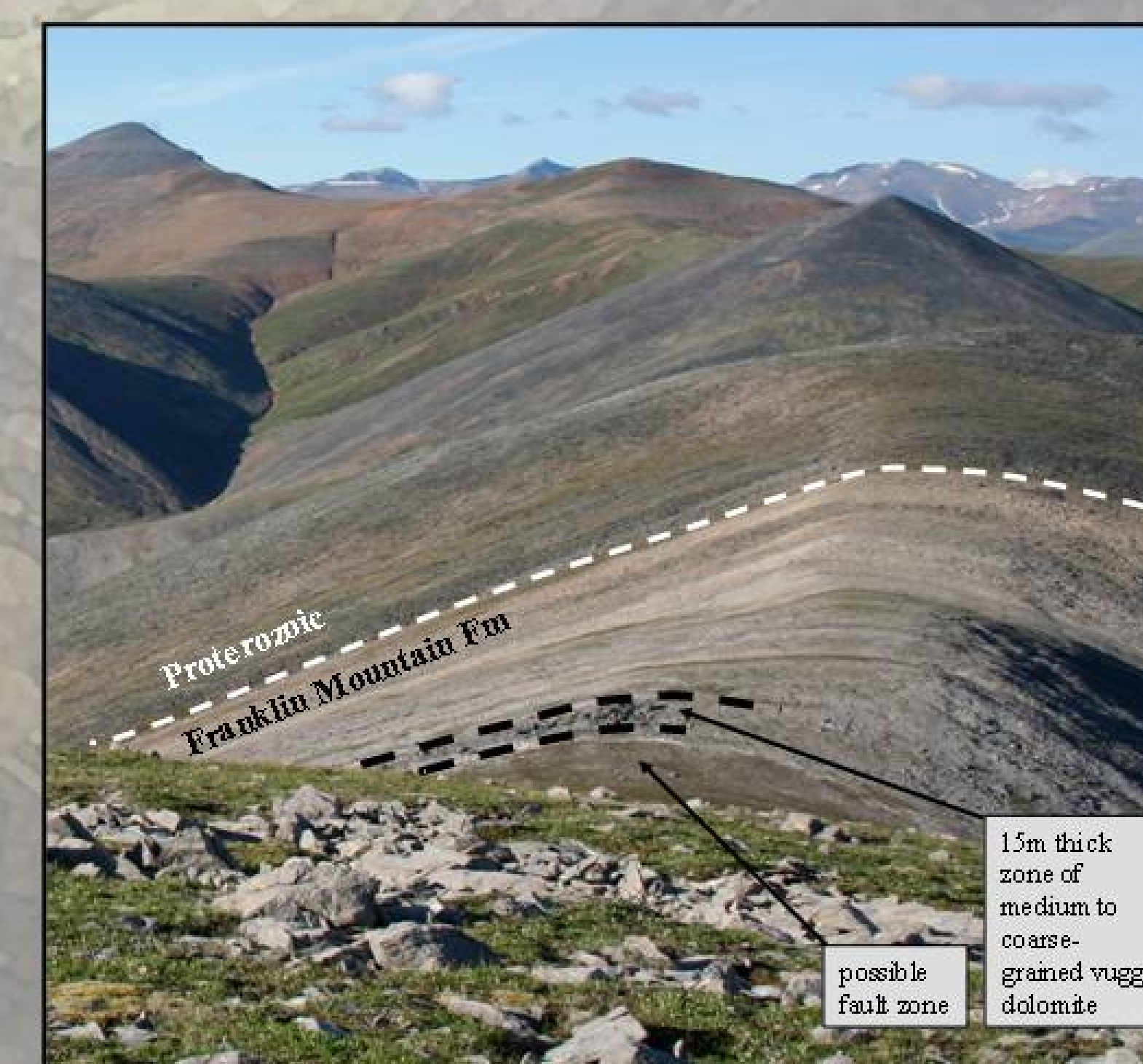
06LP-13-01 sample was collected approximately 130 m stratigraphically above the Franklin Mountain-Proterozoic contact. A 20 m thick bedding-parallel rubble zone of medium to coarse-grained vuggy dolomite is present. View is to south.



13-01: Core sample was analyzed to have 6.5% porosity and 0.09 millidarcies permeability. As with all samples, the vugs are lined with saddle dolomite and some later, light orange coloured calcite. Bar scale in cm.

SAMPLE 06LG-10-01

06LG-10-01 sample was collected approximately 220 m stratigraphically above the Franklin Mountain-Proterozoic contact. A 15 m thick zone of coarse-grained dolomite is present. The porous zone is adjacent to a possible fault zone, expressed by hematized dolostone rubble. View is to southwest.



10-01: Outcrop view of medium to coarse-grained vuggy dolomite in 15 m thick zone, with a few interbeds of laminated dolomudstone <1 m thick. Stratigraphic top to the right.



10-01: Core sample was analyzed to have 4.4% porosity and 0.29 millidarcies permeability. Bar scale in cm.

Reference cited
Gabrielse, H., 1967. Tectonic evolution of the northern Canadian Cordillera; Canadian Journal of Earth Science, v.4, p. 271-298.

