Stratigraphy, Lithology and Geochemistry of 1.9Ga ocean floor sediments in the Flin Flon and Cape Smith Belts, Canada

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The Flin Flon and Cape Smith belts in the Trans-Hudson Orogen, Canada, include volcanics, volcaniclastics and alternation of sandstone and black shale, which accumulated about 1.9 Ga. Black shale preserve organic matter, and is a clue to study about Paleoproterozoic sea environment. Therefore, we did 1)describing detail of lithology, 2)forming geological column, 3) reconstruction of stratigraphy and 3)measurement of chemical composition and organic carbon isotope ratio ($\delta^{13}C_{org}$) of black shale about drilling core TS07-01(Embury Lake, the Flin Flon belt) and drilling core 718.3333 (Povungnituk Group, the Cape Smith belt) to reveal marine biology of 1.9 Ga. These cores are mostly composed by alternation of sandstone and black shale.

TS07-01 from the Flin Flon belt is 480m at total length, and has alternation of sandstone and black shale (470m) and intrusion of rhyolite (10m). A 300m scale asymmetrical fold with several minor parasitic folds are identified due to describing the detail of the core. Reconstructed stratigraphy sequence is 280m long. Sandstone contains quartz and plagioclase and black shale is composed by cray mineral, silt size quartz and pyrite. From top to bottom of the core, major elements composition of black shale are constant and similar to that of Post-Archean Australian average shale (PAAS). Organic carbon contents (TOC) is 2.1 wt% on average, and $\delta^{13}C_{org}$ is about -37‰ to -26‰.

718.3333 from the Cape Smith belt is 60m in total and composed by continuous stratigraphy of alternation of sandstone and black shale. Sandstone mainly contains fine quartz, and black shale include cray mineral and some silt size quartz and pyrite. Chemical composition is characterized by enrichment of S and organic carbon, and lack of Fe and P. TOC is 3.5wt% on average. $\delta^{13}C_{org}$ is from -38‰ to -33‰

Two reconstructed stratigraphic sequences of Trans-Hudson Orogen and its chemical features indicate the depositional area and environment did not change because mineral and chemical composition has no variety. $\delta^{13}C_{org}$ show cyanobacteria, chlomatiaceae and chloroblaceae lived 1.9 Ga ocean, and methanogenic bacteria may acted in sediment.

