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“Hacia nuevos desafíos”

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PALYNOLOGICAL ANALYSIS OF THE LATEST FAMENNIAN MIDDLE BAKKEN FORMATION IN NORTHEASTERN MONTANA, USA: AN AGE AND PALEOENVIRONMENTAL FACIES CORRELATIVE OF THE SAPPINGTON FORMATION IN WESTERN MONTANA

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New palynology from three stratigraphic intervals from the Middle Bakken Formation in the Williston Basin of northeastern Montana (Enterprise Archer well core) is presented: two samples from the top of the lower Middle Bakken siltstone (Archer 1=7,625.0-7,626.7 feet); six samples from silty shale facies above the Middle Bakken sandstone (A2=7,600.4-7602.7 ft) and two samples from the silty shales above a bioclastic lag, below a limestone bed of the upper Middle Bakken (A3=7,599.0-7599.8 ft). *Retispora lepidophyta* is recorded throughout A1-A3 assemblages (A1: 28 spores, 13 phytoplankton, 1 scolecodont; A2: 65 spores, 14 phytoplankton; A3: 30 spores, 4 phytoplankton). The assemblages share 22 spores species (e.g. *Cristatisporites mattheusii*, *Diaphanospora perplexa*, *Grandispora echinata*, *Grandispora senticosa*, *Pustulatisporites dolbii*, *Spelaeotriletes crustatus*, *Tumulispora rarituberculata*, *Velamispores perinatus*) and few acritarchs/prasinophytes (*Gorgonisphaeridium winslowiae*, *G. absitum*), which most of them are also recorded in Middle Bakken Formation of the Montague Lake core (C-69809-21/26) of southern Canada. Even though

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Verrucosisporites nitidus is absent in Archer, this work proves that the Middle Bakken and Middle Sappington are coeval (latest Devonian *R. lepidophyta*-*Verrucosisporites nitidus* Zone) based on the occurrence of *Claytonisporites rarisetosa*, *Convolutispora major*, *Cymatiosphaera* sp., *Dictyotriletes flavus*, *Endoculeospora setaceae*, *Grandispora praecipua*, *Knoxisporites literatus*, *Navifusa bacilla*, *Retusotriletes crassus*, *Vallatisporites drybrookensis*, *V. splendens*, *Verrucosisporites mesogrumosus*, *V. papulosus* between others. The *Marine Index* (A1=150, A2=121.5 and A3=113.3) confirms that A1 was deposited in a shallow marine setting whilst A2 and A3 in brackish embayments, as suggested previously from ichnologic and sedimentologic analyses.

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