



The Rock Record – November 2009

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The SGS Newsletter is produced by the SGS executive. Letters, announcements, notices, comments, photos, news and information about SGS members, etc. are always welcome. Call an executive member or write to us at:

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All advertising inquiries should be directed to Tyler Music

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Thursday, November 12th, 2009

A New Look at McMurray Formation Stratigraphy

Murray K. Gingras

Lancaster Room, Royal Canadian Legion

Cash Bar: 11:30; Lunch: 11:45

Meeting: 12:00 – 13:00

Members \$10.00, Non-members \$15.00

Contact: Ryan Morelli (ryan.morelli@gov.sk.ca or 787-2568)

By NOON, Tuesday, November 10, 2009

Wednesday, November 25th, 2009

High-resolution sequence stratigraphy of the Upper Devonian Alexandra Reef System, Northwest Territories: New insight to the depositional controls on Devonian Reefs

Alex J. MacNeil

Lancaster Room, Royal Canadian Legion

Cash Bar: 11:30; Lunch: 11:45

Meeting: 12:00 – 13:00

Members \$10.00, Non-members \$15.00

Contact: Ryan Morelli (ryan.morelli@gov.sk.ca or 787-2568)

By NOON, Monday, November 23, 2009

A New Look at McMurray Formation Stratigraphy

Murray K. Gingras and Michael J. Ranger

The McMurray Formation of NE Alberta is accepted to represent a complex valley-fill deposit that lies on the sub-Cretaceous unconformity in northeast Alberta. The fill is by varying degrees estuarine (i.e. deposited under the influence of brackish waters), and within the main valley-trend of the McMurray, various marginal-marine affinities are demonstrable. Due in part to its marginal-marine nature, the McMurray Formation is characterized by an apparently complex stratigraphy that in places defies a categorical stratigraphic interpretation consistent with regional knowledge. This has led to a range of hypotheses that presume a regional interpretation for the McMurray based on localized datasets.

We believe that some fundamental aspects of McMurray Formation stratigraphy are easily observed and have regional significance, and that these elements can be identified in most McMurray lease areas. In other words, the primary elements of the stratigraphic framework are generally present everywhere in the McMurray Formation.

The most fundamental observation that can be made regarding the McMurray stratigraphy is the commonly observed vertical trend of the lithofacies. The trend is regular enough that the McMurray Formation can be divided into lower-, middle-, and upper-McMurray units, albeit informally.

The lower McMurray is not present everywhere. Where observed the lower McMurray may initiate with a short succession of consolidated muds that are erosionally overlain by one to several meters of unburrowed cross-bedded mg to granular sands. The granular sands abruptly translate into one- to several-meters of unburrowed to rarely burrowed inclined heterolithic stratification (IHS). The base of the IHS package is commonly discernible as a sharp contact characterized by a change in grain size — commonly to fg sand, and locally with a granule to pebble lag. In cases where the lower coarse unit fines upwards, the contact can be cryptic. Eroded into the IHS may occur another coarse to granular unit with another IHS unit sharply situated above that. The granular / IHS pairs are recurring stratigraphic themes in the lower McMurray and upwards in the middle McMurray. Marking the top of the lower McMurray is a pedogenically altered, locally coal-rich silty mudstone. The mudstone is laterally disrupted by sharp-based granular lenses, through to thickly cross-bedded granular sand.

The middle McMurray bears similarities to the lower unit, but is certainly sedimentologically distinctive. The middle McMurray is initiated with a sharp-based sand that is locally granular. This commonly fines into rarely burrowed cross-bedded fg / lmg sand. As with the lower McMurray, several to tens of meters of burrowed IHS may sharply or erosionally (i.e. demarcated by a lag) cut into the cross-bedded unit, however, this contact is just as commonly

cryptic. The middle McMurray is also characterized by cross-bedded-sand / IHS stratigraphic pairs and it is common for a second pair to occur within the middle McMurray. Rarely a third stratigraphic pair is observed.

The upper McMurray is generally stratigraphically simple and it dominantly comprises three upwards-coarsening parasequences. Bioturbation ranges from unburrowed to thoroughly burrowed. Each parasequence is approximately 10m thick and these are normally rooted at their tops. Sedimentologically, the upper McMurray is variable. Importantly, channelized units of sand, IHS, or muds are sporadically present.

The stratigraphic theme outlined above can be simply explained. In the lower and middle McMurray, coarse-grained, cleaner units represent transgression and dominantly estuarine conditions. The dominance of IHS is associated with accommodation space becoming limited, and a switch to restricted estuarine or even deltaic sedimentation. In this framework, a history of ingression and regression are preserved. At least seven 10m-scale increases in sea-level are needed to satisfy the stratigraphic model. Importantly, no notable sea-level lowstands are invoked in this interpretation. Although there may be a general trend towards more marine sedimentation upwards, it appears that marine influence waxed and waned *throughout* the accumulation of McMurray strata.

Although the general trends presented above can be observed in many locales, much is made about the areas that do not conform to the regional model. These are taken as proof that the McMurray is a composite of incised valley fills. A more parsimonious interpretation of the regional variability is that in different locales, parts of the transgressive / regressive stratigraphic pairs were simply not preserved—a scenario that led to the preservation of very thick resource-bearing sands (e.g. Firebag) in some areas, and channelized sands of variable IHS character in others (e.g. Long Lake). This factor along with spatial considerations, such as proximal / distal relationships, and considerations of the depositional environment (e.g. the local presence of deeply downcut distributary channels), conspire to complicate stratigraphic observations in the McMurray Formation.

2009 SGS Golf Tournament and BBQ:

The 23rd Annual Golf Tournament and BBQ was held on Sept. 11 at the Murray Golf Club with 59 golfers participating. The BBQ was attended by approx. 80 people and was hosted by Deb and Kim Kreis at their lovely estate in White City - we thank them for their hospitality. The BBQ numbers are down from past years, so let's hope we can see more participants out next year !! I should also thank Bill Slimmon and his able sidekick Horst Stolz for acting as our brewery and vineyard reps. A great time was had by all !!!!

The event was "won" by Thomas Love, Megan Love, Leah Beauchesne and Clayton Beauchesne. Hopefully, we will see everyone out again next year.

This year, the golf gods were good to us again with sunny, warm weather. To those members who have never participated in either the golf or the BBQ, you are missing a great event. Please note that you do not have to be a golfer to play and if you do not wish to play you may still participate in the good food, drink and company at the BBQ. Keep this in mind and maybe we'll SEE YOU NEXT YEAR

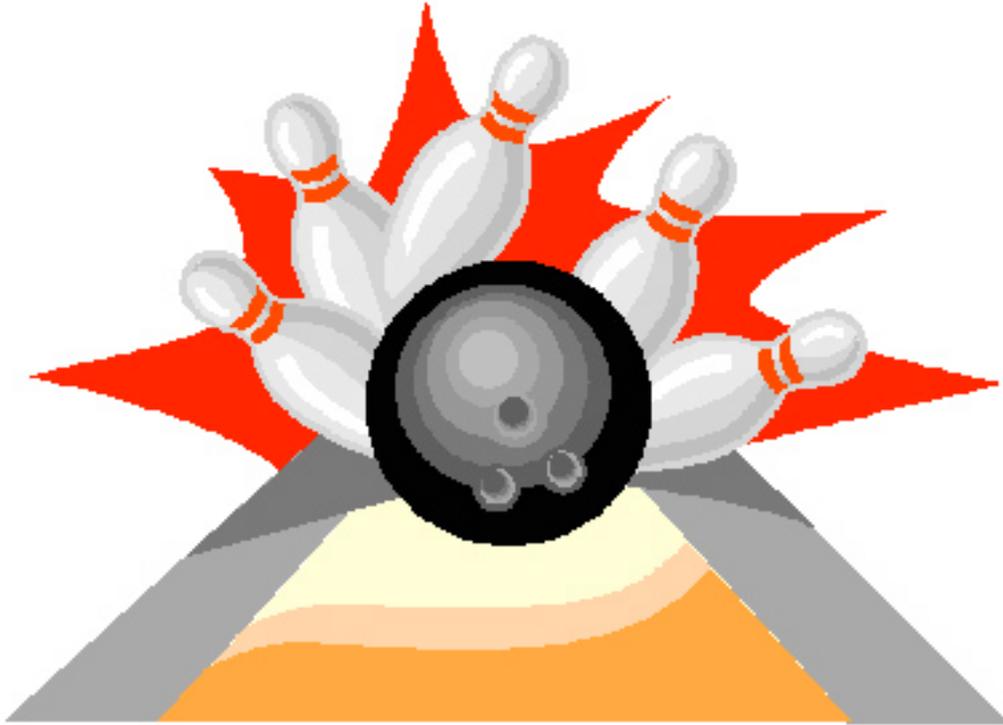
The organizers of the tournament, Bob Troyer, Arden Marsh, Erik Nickel and Pam Schwann (who lobbied the mining community for prizes) would like to extend their appreciation to the following sponsors of the tournament without whose support they could not organize the event and provide all of the prizes, food and refreshments:

Sherritt Coal (Poplar River)
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IHS Energy
Villanova Energy
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JNR
Sask. Geological Society
Solvera
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DM Kent Club Presents
GEOLOGY BOWLING NIGHT

Friday November 13



Glencairn Bowling Alley

7:30-9:30pm

\$5/person for DM Kent Club Members \$10/person for non-members

Sign up your team today! (sign up sheet is located outside the “student study area” door) Each team is encouraged to **pick a theme** and dress up

Prizes will be awarded for best team costume (**\$50 bar tab**), best individual costume (**Geology hoodie**) and there will also be door prizes provided by **I&J Prairie Minerals**