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RECOMMENDED REVISIONS TO MID-CARBONIFEROUS STRATIGRAPHY AND NOMENCLATURE, BIG SNOWY TROUGH, CENTRAL MONTANA, USA

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Mid-Carboniferous black shales in central Montana were included in the Heath Formation of the Big Snowy Group by Scott in 1935. Poor surface exposures have led to numerous debates as to the exister unconformity between beds assigned to the Heath and the overlying Tyler, whether strata assigned to the Tyler are a mappable unit, and the age of the Tyler. New subsurface cores provide detailed litholo stratigraphic data that facilitate an internal subdivision of the Heath and enhance understanding of the relationship of Heath and Tyler strata.

Historically, the definition of the base of the Heath has been based on a color change from bright green shales in the Otter to black shales in the Heath. This is problematic in that the contact is not expose and is not mappable with precision. This study proposes that the base of the Heath / top of the Otter be re-defined as the top of a laterally persistent limestone bed that is regionally correlative in the subs mappable at the surface (Scott, 1935). All of the bright green mudrocks of the type Otter are below this limestone, and all of the black mudrocks of the type Heath are above this limestone.

The top of the Heath Formation should be defined as the sequence boundary above which sandstones and large wood fragments are present. The clastic-bearing unit above the Heath, deposited in incise assigned to the Stonehouse Canyon Member of the Tyler. The Bear Gulch Limestone is within the Stonehouse Canyon and it should be included in the Tyler. The overlying Cameron Creek is distinguished predominance of red and green mudrocks and overlies a regional unconformity.

New data allow for an informal subdivision of the Heath. These units, in ascending order, are the lower Heath, Van Dusen zone, Cox Ranch Oil Shale Interval (expanded from the original definition), Red Hi (includes the Loco Ridge Gypsum bed), Winnett Shale (lowstand basin fill), and upper Heath. These cyclic, mudrock-dominated strata record an overall rising relative sea level during Heath deposition and from moderately humid during deposition of the Van Dusen to very arid during deposition of the Red Hill Carbonate. Large eustatic sea level falls resulted in sequence boundaries at the Heath-Stonehous Stonehouse Canyon-Cameron Creek contacts.

Session No. 281--Booth# 302
D30. Recent Advances in Sediments, Clastic (Posters)
Wednesday, 25 September 2019: 9:00 AM-6:30 PM

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