normalized abundance of REEs shows a distinct and unique increase in relative abundance progressively from the lightest to heaviest REE.

A preliminary outcrop chemostratigraphic profile of the upper Green River Formation (Mahogany Oil Shale Zone - Uinta Formation boundary) in the Uinta Basin, Utah, USA

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In the Uinta Basin of eastern Utah, the base of the Mahogany Oil Shale Zone (MOSZ) marks the start of the mudstone-dominated upper Green River Formation (GRF). The thickness of the upper GRF increases from east to west due to the subsequent interfingering and progradation of the sandstone-bearing Uinta Formation; in the east of the basin at Buck Canyon, the upper GRF is ~175 m thick. Although variably grey to brown to black, variably shaley, variably organic rich (oil shale) to dolomitic to very finely arenaceous and tuffaceous, the mudstone of the upper GRF is not easily subdivided, and correlation exercises are complicated by the thickness variation and interfingering of the different types of mudstone. In such thick successions of mudstone and shale, where biostratigraphic control is lacking, an emerging method for subdivision is chemostratigraphy. This ICP-MS-based technique has the potential to subdivide section based on the identification of beds with unique elemental anomalies, gradual or stepped trends of increasing/decreasing elemental ratios in particular intervals of the succession, or changing dispersion about the mean of elemental ratios at particular horizons.

Samples were taken in the upper GRF at two adjacent sections near Buck Canyon. Regular, but different sampling intervals were chosen at the two sections, and additional samples were taken at other distinct beds. Statistically significant differences in the ratio of many pairs of elements between a lower and upper interval in the upper GRF were identified in one set of data, but not replicated in the other. A subtle decrease in the Ga:Rb and Fe:Ti ratios for shale samples are the only potential changes common to both sets of data. Recognition of elemental anomalies associated with particular beds shows much more promise. To date, work has concentrated on phosphorus anomalies associated with oil shales. One oil shale in both sets of data shows a P-enrichment of well over an order of magnitude, approaching 7% abundance. Additionally, the

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