ABSTRACT

TITLE:	The Initial Flooding of The Paradox Basin; The Sequence Stratigraphy of The Pennsylvanian (Atokan) Pinkerton Trail Formation, San Juan Mountains, SW Colorado
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ABSTRACT: The Pennsylvanian (Atokan) age Pinkerton Trail Formation of the eastern Paradox Basin (SW Colorado) displays an uncommon stratigraphic signature that is composed of subtidal carbonate sediment packages punctuated by coal layers, reflecting large scale sea level change. These high amplitude relative sea level changes are attributed to combined glacial eustasy and rapid tectonic subsidence on the complexly faulted basin margin during the second order transgressive system tract of the basin. The field area stretches along a 55km strike oblique transect from a southern fault block that was inundated in clastic sediment after the Pinkerton Trail carbonate deposition, to a northern block which continued to have shallow water carbonate deposition into the Lower Desmoinesian Barker Creek interval. Stratigraphic sections were measured at four outcrops on the western side of US Highway 550 north of Durango, CO. Three were within 7km of each other between Goulding Creek and Cascade Creek, and the fourth was 42km north of the others near Molas Lake, north of the Snowden fault (Spoelhof, 1974). In the three downdip locations, three carbonate-dominated sequences bounded by thin clastic fluvial packages were found. The clastic packages were topped by 10-15cm thick anthracitic coals and rooted zones indicating subaerial exposure. Above the coals, one to two centimeter thick black shales with brachiopods mark knife-sharp flooding surfaces overlain by subtidal spiculitic wackestones, consistent with a transgressive system tract signature. The lower sequences at the Molas Pass location were also dominated by subtidal spiculitic wackestones; however, this location contains more parasequences and shallower, photic zone carbonates with stromatolites, phylloid algae, and Chaetetes . The facies variation between the three down dip locations and the shallower water facies of the Molas Pass area is likely due to its location on a higher fault block on the eastern shelf of the Paradox Basin near the uplifted Grenadier block (Spoelhof, 1976).