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Transgressive Shoreface Erosion, Translation, and Wave Ravinement on an Epeiric Shelf as Recorded by a Soil Nodule Conglomerate-Arenite in the Upper Pennsylvanian Oread Cyclothem, SE Kansas and NE Oklahoma.

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Transgressive deposits of the Leavenworth-Heebner-Plattsmouth-Heumader minor cyclothem of Oread Cyclothem overlie multi-story Calcisols and Vertisols and consist upward of thin Gleysol, conglomerate-arenite (5-25 cm), and fossiliferous shale and Leavenworth Limestone (1-2 m). The conglomerate-arenite is present 15 outcrop sections covering 100 km, and 76 wells and cores in SE Kansas and NE Oklahoma. It is a single bed with conformable lower and upper contacts, composed of blackened clasts (80-95%), bedding-plane-parallel fossil fragments (5-20%), and rare coal fragments. Clasts are rounded, equant-to-elongate, coarse-sand-to-pebble size, and moderately sorted, including micritic and radial-fibrous calcite grains, and pisoids. Micritic grains contain quartz silt, radiating and concentric spar-filled cracks, and rounded central molds with micrite or spars. Pisoids have micritic-clast cores and superficial micritic or ferruginous clay cortexes. They have the same texture and composition as pebble-sized calcitic nodules, rhizoliths, and clasts of a channel-fill conglomerate in underlying paleosols and were probably derived from soil nodules.

Landward and upward shoreface translation during early transgression on fluvial peneplain eroded underlying paleosols and coeval early-transgressive deposits landward of the shoreline. Excavated soil nodules were reworked and transported to inner shelf by storm return flows and concentrated as a transgressive lag, forming soil nodule conglomerate-arenite. Base of the conglomerate-arenite is a wave ravinement surface, under which Gleysols formed by leaching and reworking of underlying paleosols by seawater. The persistent conglomerate-arenite suggests extensive transgressive ravinement on gentle Kansas Shelf. The transgressive record is a T-C1 succession with a simple transgressive lag, composed of mixed carbonate and siliciclastic rocks.