

SEQUENCE STRATIGRAPHIC FRAMEWORK FOR THE UPPER DEVONIAN OHIO SHALE WITHIN THE APPALACHIAN BASIN

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ABSTRACT

The upper Devonian Ohio Shale is an organic-rich marine stratigraphic unit that was deposited in distal portions of the Acadian foreland basin in present-day Ohio and Kentucky. Even though the Ohio Shale has been researched in the past, no detailed sequence stratigraphic framework has been constructed for the unit. Our study will be focused on correlating regressive-transgressive cycles and sequence-bounding unconformities interpreted for shallow shelf intervals in the east (e.g. WV, PA, NY) with black/gray shale cycles representing likely correlative conformities developed in deeper water environments to the west (OH, KY). Methods will include constructing outcrop measured sections and gamma ray logs and logging core to document the sedimentological signature of both proximal and distal T-R cycles and sequence-bounding unconformities. These data will be used to construct a detailed subsurface correlation of the Ohio Shale interval using >600 digitized geophysical logs from the region. Source rock hydrocarbon potential for the unit will be evaluated through the TOC, pyrolysis, and vitrinite reflectance data sampled from cuttings and core for identified sequences. Hydrocarbon potential for the Ohio Shale and its correlatives in West Virginia and Pennsylvania will be mapped within the context of the sequence stratigraphic framework constructed and will be used to evaluate the interval as an unconventional resource play.

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