Deepwater Lower Atoka Sedimentology and Stratigraphy Latimer County -- New Findings and a Progress Report

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Deepwater lower Atoka road cut exposures are being studied along OK-2 and OK-82 between the Ti Valley and Winding Stair faults. Detailed measured sections, which include paleocurrent data analysis, have been completed in each area. Outcrop total and spectral GR profiles has been completed for OK-2 and is in progress for the OK-82 sections.

Work has focused on the Atoka within a few hundred meters above the contact with the underlying Johns Valley Shale because it was initially used as a stratigraphic reference. It is now possible to make detailed correlation using spectral GR and occurrence of a skeletal-moldic sandstone (Spiro equivalent) as a marker.

From detailed studies along OK-2, mudrocks dominate the section with interstratified sandstone beds rarely exceeding 0.5-m thick. Amalgamated Ta, Bouma successions with Ta present, and successions with Ta absent (Ta-e are rare) lithofacies associations and vertical bed-thickness trends indicate that most of the sandstones were deposited in fan lobes. Paleocurrent trends also serve to define specific lobes where sufficient data are present -- general transport is westward. Mid-fan channel-levee deposits are also recognized. Exposures along OK-82 are clearly more proximal compared to those along OK-2 (~16 km. west of OK-82). Thick (2+ m) channel-levee deposits dominate the section. Paleocurrent indicators related to lithofacies indicate a general southward transport direction. A mud-dominated deepwater fan model is appropriate for the lower Atoka. It appears that smaller more locally derived fan deposits.