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Cretaceous Depositional Environments of the Bermejo Field, Northwestern Oriente Basin, Ecuador

The Ecuadorian Oriente basin is part of the Sub-Andean retro-arc foreland basin system that reaches from Venezuela to southern Chile. The Bermejo field in the Ecuadorian Oriente basin consists of two low-relief hanging wall anticlines (Bermejo North and South) formed by the late Cretaceous Andean faulting. Primary reservoirs in the field are the Cretaceous Hollin Principal and Secundario and Basal Tena sand. Analysis of 3-D seismic and wireline log data suggests that much of the Hollin Formation represents stacked channels resulting from multiple channel erosion and switching. The upper Hollin Secundario was influenced by tidal processes. The Napo Formation, overlying the Hollin Formation, is characterized by: (1) the excellent correlation of log signatures, (2) continuous seismic reflections, and (3) the absence of thick sand layers except for the Napo \pm , suggesting deposition from uniform processes probably in a shelf environment. The upper Napo and lower Tena formations consist of a series of transgressive sequences punctuated by a brief sea-level fall that deposited the Basal Tena sand.

The orientation of the channel-like features in the Hollin Secundario and Napo \pm and the northward thinning of the top Hollin shale suggest EW - or NW-SE-trending paleo-shorezone and a southerly or southwesterly sediment source. This is different from the existing depositional models that depict NS-oriented paleo-shorezone and a westerly sediment source.