FACIES ARCHITECTURE IN A MASS TRANSPORT DOMINATED AXIAL CHANNEL BELT, MIOCENE TO OLIGOCENE PUCHKIRCHEN FORMATION, UPPER AUSTRIAN MOLASSE BASIN

Whereas many well known outcrops of deep-water channels are dominated by clast-supported conglomerate and sandstone deposited by turbidity currents, channel-fill units the Upper Puchkirchen Formation in the Puchkirchen gas field, Austria, consist mainly of thick debris flow deposits with less abundant interbedded reservoir sands. During the deposition of the Puchkirchen Formation, sedimentation in the Upper Austrian Molasse Basin was dominated by a large deep-water, axial channel belt that served as a conduit for debris flows and turbidity currents. This low-sinousity channel belt was 3-5 km wide and more than 100km long. Architecture of the reservoir interval within the channel was controlled mainly by the deposition of mass transport complexes. Thick-bedded sandstones representing the gas reservoirs themselves are concentrated in the thalweg of the channel belt where they locally reach more than 20 m in thickness. To date, no smaller-scale channels and associated levee deposits have been recognized within the larger channel. In fact, mass transport domination of the channel system may have prevented the development of a complex internal channel belt architecture with differentiated architectural elements such as channels and levees. Controls on sandstone deposition could have included local topography on the tops of the debris flow deposits, local cut and fill by the turbidity currents, or topographic barriers within the channel associated with debris-flow fronts, tributary channels, or localized bank failures. The development of a tributary channel that might have contributed material from the northern channel margin into the channel belt favors the scenario of a
local intra-channel barrier that triggered deposition from mainly through-going turbidity currents. Understanding the processes involved in the filling of this deep-water, axial channel belt provides insight into deep-water sedimentation and reservoir development within narrow elongate basins and debris-flow-dominated deep-water systems.