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Integration of geologic model and reservoir simulation, Popeye Field, Green Canyon 116

Small variations in fault length, channel permeability, and aquifer volume defined in our geologic model of the G-sand strongly influence flow characteristics, and hence the predicted recovery from the RA reservoir in the Popeye field (Gulf of Mexico, GC 72/116). A history-matched base-case reservoir simulation, with structure and rock properties derived from the geologic model, results in a volume of bypassed gas-condensate in the RA reservoir. Turbidite gravity flows entered the basin from the north and deposited amalgamated sheet sands. This was overlain by channels that bypassed the Popeye area, depositing interbedded very fine-grained sands and silts in levee-overbank environments. A channel and impermeable faults compartmentalize the G-sand into four gas-condensate reservoirs (RA, RB, RM and RN). By increasing the distance between two faults separating the RA and RB reservoirs, decreasing the RA aquifer volume, or increasing channel permeability in the reservoir model, flow characteristics in the RA reservoir change. These changes, which reflect the geologic uncertainties in our interpretation, result in economically significant differences in total recovery.