Mechanism of halite crystal shapes formation in evaporites of Member 2 in Gachsaran Formation at Ab-Teymure Oil Field

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(Received: 25/12/2007, in revised form: 8/6/2008)

Abstract: Cutting samples from evaporite deposits of Member Two of Gachsaran Formation in well #1 at Ab-Teymure Oil Field have been studied by petrographic microscope, SEM with EDX attachment and XRD to identify the halite crystal shapes. This study led to recognition of three stages, including flooding, concentration and desiccation, for the formation of halite in salt pan. In the flooding stage, the flooding water dissolves the saline crust in the floor of salt pan, which are flat and vuggy. At the second stage, dissolution of halite and evaporation continued. As the concentration of brine increased, rafts, plates and hopper shapes of halite crystals form at the air-brine interface. Finally, these crystals precipitated to the bottom of the salt pan as the weight of crystals increased. At the last stage, salt pan was dried and hyper saline condition was dominated below the surface during lowstand. During this stage, halite crust formed on the surface of salt pan and clear crystals of halite in cubic and cumulative form may have been precipitated in vuggy pores that formed during dissolution of salt.

Keywords: hopper, halite shape, Gachsaran Formation, salt pan.