Recognition of intra-field variability in contact styles, an example from the Hoadley Barrier Complex in south-central Alberta

J.J. Dunn, Petrel Robertson Consulting Ltd., Calgary, Alberta
jdunn@petrelrob.com

Abstract

Recognition of bounding surfaces within reservoirs may play a role in understanding reservoir geometries as well as potential constraints on deposition. Transgressive surfaces are one such type of surface. These surfaces are particularly interesting as the variability in the nature of the contact may make recognition of the contact more difficult without the integration of core data. This study will present an example of intra-field variability of contact style.

The Hoadley Barrier is a well documented barrier located in south-central Alberta. Hoadley is a giant gas field comprised of Glauconitic Formation sediments of the Mannville Group. The Barrier–Bar Complex extends northeast-southwest for approximately 200km along strike and is more than 25km wide. The paleogeography of the Glauconitic Formation in southern Alberta has been well defined- channels running north from the Sweetgrass Arch feed the barrier, with open marine conditions to the northwest of the barrier. The barrier itself consists predominantly of wave dominated shoreface sandstones .

Within the barrier complex, two distinct sands can be recognized, and were called the Lower Glauconite and Upper Glauconite by Chiang (1984). Each of the sands is mineralogically distinct and has unique reservoir properties. The ability to recognize these sands may play a role in exploration and development efforts. Definition of sand geometry for both of these sands is complicated by the variable nature of the contact between them. The contact may be sand on sand, pebbles, a mineralized or cemented horizon or a coaly horizon.

To adequately correlate the distribution of the sands, recognition of the contact between the sands in all of its forms must occur. The use of core to assist in the definition of the contacts, as well as to establish characteristic log signatures of the different contact types, may assist in the mapping of these units. This core study demonstrates the variable nature of the contact between the two sands.