Shale Gas in Quebec's Sedimentary Basins

Jean-Sebastien Marcil[1], Peter K. Dorrins[1], Jeremie Lavoie[1], and Jean-Yves Lavoie[1]
[1]Junex inc., Quebec-City, QC, Canada G1V 4M7, js_marcil@junex.ca

Keen interest for Shale Gas remains high in the Southern Quebec Lowlands. During 2009 to 2010, fifteen shale gas wells were drilled in the basin. The calcareous and organic-rich Middle Ordovician Utica Shale is the main target of this recent exploration effort. To date, most operations have been performed in the medium to deep depth thermogenic Shale gas play (1,000-2,000 meters), located in the central part of the Saint Lawrence Lowlands. With OGIP estimates ranging from 75 to 300 Bcf per section, the deep play is definitely considered to be promising. Publicly-released information from the different tested areas in the basin expressed a potential gas-in-place over 200 Tcf (OGIP). After drilling exploration wells in order to delineate a "sweet spot", companies have now focuses their effort on determining the highest gas prone unit within the Utica. Discussions concerning pilot-test projects are also beginning.

While testing the deep shale potential, JUNEX also evaluating the potential of the other shale gas plays. Only over the last two years, Junex started the evaluation of gas potential in three other shales: 1) Shallow to medium depth thermogenic Shale gas; 2) Overthrusted Shale gas; 3) Intra-Appalachians sub-basin Shale gas.

The three plays will be described based upon the data available regarding the basin geology, shale mineralogy, organic matter type, gas geochemistry, structural style and infrastructure access. The characteristics of the plays, from a geological, geochemical, structural and geophysical perspective, will be reviewed.

In addition of the acquisition of a large geoscience database, new exploration efforts undertaken by JUNEX include:

- Exploration well in the deep and shallow shale plays;
- Propane frac stimulation in the shallow shale play;
- Exploration in the new intra-Appalachian basin;
- Scheduled for summer 2010: two exploration wells in the overthrusted shale play.