“Vertical Gas Migration and Fracture Sidewall Cementation, Marcellus Formation, Central New York”

Bruce Selleck and Philip Clayton
Department of Geology
Colgate University
Regional setting

Stratigraphy

Fractures and fracture sidewall cementation

Stable isotope geochemistry of vein calcite
NATURAL GAS MIGRATION PROBLEMS IN WESTERN PENNSYLVANIA

The Pittsburgh Geological Society
FIGURE 4.3

EAST WEST CROSS-SECTION OF NEW YORK STATE

Technical Support Document to the Draft Supplemental Generic Environmental Impact Statement

Draft SGEIS 9/30/2009, Page 4-9
### New York’s major gas shale units

<table>
<thead>
<tr>
<th>Period</th>
<th>Group</th>
<th>Unit</th>
<th>Lithology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devonian</td>
<td>Upper</td>
<td>Genesee</td>
<td>Genesee Shale, Tully Limestone</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>Hamilton</td>
<td>Marcellus Shale</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>Tristates</td>
<td>Onondaga Lst, Oniskany Sst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Helderberg</td>
<td>Manlius Lst, Rondout Dol, Akron Dol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Salina</td>
<td>Bertie Shale, Syracuse Salt, Vernon Shale</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td>Lockport</td>
<td>Lockport Dol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinton</td>
<td>Rochester Sh, Irondequiot Lst</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td></td>
<td>Sodus Shale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medina</td>
<td>Grimby Sst, Queenston Sst, Lorraine Sst, Utica Shale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beekmantown</td>
<td>Tribes Hill Lst</td>
</tr>
<tr>
<td></td>
<td>Upper</td>
<td></td>
<td>) Knox Unc.</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>Beekmantown</td>
<td>Little Falls Dol, Galway Sst</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potsdam Sst</td>
</tr>
</tbody>
</table>

- **Marcellus**
- **Utica**
Stratigraphy of the lower Hamilton Group south-central Madison, County NY
Pecksport fracture sidewall cementation; calcite veins

Mottville Mbr. gas seep

Village of Hamilton

Peck water well
Mottville Mbr. gas seep
Pecksport cemented fractures/veins

Pecksport Member
Butternut Member
Pompey and Delphi Station Mbrs.

Village of Hamilton
Peck water well

Schematic N-S Section
200'

Chenango Mbr.
Skaneateles Fm.
Marcellus Fm

Oatka Creek Member
Bridgewater Member
Solsville Member
Pecksport Member

Village of Hamilton
Biogenic carbonate
Marcellus Fm.*
Holocene meteoric calcite**

*Koff and Selleck, 2008
**Selleck and Baran, 2003