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# Petrographic Analysis of the Oriskany Sandstone (Lower Devonian) from the Ellisburg Storage Pool, Potter County, Northcentral Pennsylvania

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Research & Scholarship SYMPOSIUM

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Three Lower Devonian Oriskany Sandstone cores, EW-216 (core 1), EW-415 (core 2), and EW-706 (core 3), were obtained from Dominion Transmission's Ellisburg Storage Pool, located in Potter County, northcentral PA. The goal of the project was to create a petrographic analysis and description of the cores, with special attention given to any deformational features associated with stress/strain indicators. Extended Range Helium Porosimeter measurements, XRD analysis, and thin section production were completed by Calgary Rock and Materials. The cores were then analyzed using a petrographic microscope; a complete description from the analysis was written for each core. Photographs were taken of any unusual or diagnostic features in the thin sections. Porosity and permeability for the cores were: 9.88 % porosity and 76.5 md air permeability (core 1), 7.95 % porosity and 10.5 md air permeability (core 2), and 9.41 % porosity and 26.7 md air permeability (core 3). Quartz and dolomite were the primary mineral constituents for each core (0.88 vol fraction and 0.10 vol fraction for core 1; 0.76 vol fraction and 0.24 vol fraction for core 2; and 0.89 vol fraction and 0.11 vol fraction for core 3, respectively). Calcite was also present in core 1 (0.02 vol fraction), and in trace amounts in core 2 and core 3. Fluorapatite, pyrite, and biotite were present in trace amounts in each of the cores. Organic material was identified (in close proximity with pyrite in some cases) and closely associated with compaction and deformational features in the sandstone. Possible stylolites were identified in three thin sections, and possible fractures traces in four thin sections. Each core had bimodal grain size, and several thin sections showed elongated quartz grains. No distinct grading or bedding was visible. While the study gave a complete petrographic description, additional information (such as oriented cores) is needed to make any definite conclusions about the history of the stress/strain causing the deformational and compaction features seen in the thin sections.