

## **Violet Grove CO<sub>2</sub> Injection Project: Monitoring with Timelapse VSP Surveys**

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### **Abstract**

At the Violet Grove pilot project, near Drayton Valley, Alberta, CO<sub>2</sub> is being injected into the Cardium Formation in the Pembina Oil Field for enhanced recovery and carbon sequestration purposes. The reservoir is being monitored for changes using simultaneously acquired timelapse multicomponent surface and borehole seismic surveys. The baseline survey was acquired in March 2005 prior to CO<sub>2</sub> injection. The second survey was acquired in December 2005 after eight months of CO<sub>2</sub> injection. The borehole seismic data displays higher bandwidth and increased resolution as compared to the surface seismic data; in particular, the PS-wave borehole seismic data shows significantly better results. Preliminary comparisons between the baseline and monitor borehole seismic surveys show an increase in amplitudes at the reservoir.