

## **Weyburn core assessment from pre CO<sub>2</sub> and post CO<sub>2</sub> injection wells. Determining the impact of injected CO<sub>2</sub> on the reservoir.**

*Gavin, K. S., Jensen.*

*Saskatchewan Ministry of the Economy*

### **Abstract**

Saskatchewan is home to the Weyburn and Midale oilfields, which together contain the largest amount of injected anthropogenic CO<sub>2</sub> on the planet. Approximately 25 million tonnes of CO<sub>2</sub> are already stored in these two reservoirs, with an additional 2.8 million tonnes added annually. A recently initiated project, Saskatchewan CO<sub>2</sub> Oilfield Use for Storage and EOR Research (SaskCO<sub>2</sub> USER) will advance the rich datasets from the Weyburn and Midale fields to better inform prospective CO<sub>2</sub>-EOR operators, government regulators and service providers on how to improve the efficiency of CO<sub>2</sub>-EOR operations, maintain the safety and integrity of CO<sub>2</sub> storage, and limit liabilities and risks during operations. There are seven research areas in the SaskCO<sub>2</sub> USER Project, a core assessment being one.

The core assessment project is investigating the affect of injected CO<sub>2</sub> on the rock framework and the pore space. Two pressure observations wells have recently been drilled in the Weyburn field. Extensive cores were taken from the two wells. This provides a unique situation to observe the influence of injected CO<sub>2</sub> on the rock framework and pore space at reservoir conditions. Comparing the recently drilled wells to wells that were drilled prior to CO<sub>2</sub> injection will reveal, if any, the affects of injected CO<sub>2</sub> on the reservoir.

This field scale “laboratory” provides a rare opportunity to investigate the results of injected CO<sub>2</sub> on the reservoir at an active injection site leading to a better understanding of the response of the reservoir over the last 15 years of CO<sub>2</sub> injection. The analytical techniques that are being utilized to determine if the injected CO<sub>2</sub> has impacted the reservoir are: QEMSCAN to determine the mineralogy and porosity, thin sections, SEM images, and stable isotope analysis. Preliminary results will be presented recently commenced project.