



## WCSB Devonian Carbonate Core Workshop: Essential guide to depositional settings and lithologies, with examples from the Clive Leduc CO<sub>2</sub> CCS

### Instructors:

Eva Drivet, Drivet Geological Consulting Ltd.

David Hills, Enhance Energy Inc.

### Post-Meeting Course– 1 Day: Thursday May 14, 2020

#### Course Outline:

This course starts with a one-hour slide presentation to review the basics of carbonate sedimentology and diagenesis, and how both can impact on reservoir character and quality. The importance of understanding what controls reservoir character in carbonates will be highlighted with an example from the Clive Leduc Field of Alberta, targeted for CO<sub>2</sub> sequestration and miscible flood EOR.

The session continues with a core workshop exercise to compare and contrast limestone and dolostone reservoirs in two main depositional settings; reef and reef interior. Cores from the Devonian Swan Hills (Judy Creek limestone vs. Simonette dolostone) and Leduc (Golden Spike limestone vs. Clive and Rimbey dolostone) are selected for the displays. The group will wrap up with a discussion to share findings and observations from cores, and how this information can be used to enhance performance and results in real case studies, with examples from the Clive Leduc CO<sub>2</sub> EOR and CCUS projects.

The course can be combined with the Grassi Lakes Field Trip on May 15 for an outcrop overview of Leduc equivalents and to continue the discussion on CO<sub>2</sub> sequestration and EOR projects.

#### Course Objectives:

- Review the basics of carbonate sedimentology and diagenesis, and how both can impact on reservoir character and quality.
- Understand key factors that control reservoir character in carbonates, and how those impact CO<sub>2</sub> sequestration and miscible flood EOR.
- Get an opportunity to examine classic examples of Devonian carbonate cores from the WCSB.

For those signed up to the Grassi Lakes Devonian outcrop field trip on May 15, review the equivalent in the subsurface.

#### Who Should Attend:

This core workshop is open to everyone, but will benefit those looking for a brief overview and refresher on Devonian carbonate reservoirs, and support staffs working with geoscientists on carbonate reservoirs with an interest towards carbonate exploration, development, and CO<sub>2</sub> EOR/CCUS type projects.

*Meeting registration is **NOT** required to sign-up for this course*

#### Registration Rates: (rates do not include GST)

- Early-bird CSPG member rate: \$575
- Early-bird non-member rate: \$775

#### Early Bird Ends: **April 23, 2020**

- CSPG Member rate: \$775
- Non-member rate: \$975

#### Registration Close: **May 7, 2020**

CPD: 7.5

**Registration includes:** Coffee breaks, lunch and printed course manual

**Time:** 8:30am-4:00pm

**Location:** AER Core Research Centre, 3545 Research Way, NW, Calgary AB



## About the Instructors



**Eva** has over twenty-five years' experience working for major to intermediate size petroleum companies, on Mississippian and Devonian carbonate reservoirs of western Canada. She first developed her passion for carbonates while attending McGill University geology undergraduate program. One of the many highlights of her undergraduate studies was working as a field assistant in the Main Ranges of the Rocky Mountains near Banff and Golden, for a Ph.D. student supervised by the late Dr E.W. Mountjoy. Mapping spectacular exposures of Leduc equivalent Devonian reefs in Banff national park and surrounding areas was a unique opportunity to get a full appreciation for the three dimensional vertical and lateral variations characterized by this depositional setting. She continued to develop her skills while completing a Master's degree in 1994 under the supervision and mentorship of Dr E.W. Mountjoy – this time studying the Devonian Leduc Formation in the subsurface, describing many cores from wells drilled along the Rimbey Meadowbrook reef trend between Caroline and Edmonton. An integrative approach was used by incorporating data from regional mapping, petrography, logs and geochemistry.

This integrative approach, combined with a focus towards looking at rocks, remains a strong emphasis to this day in Eva's work when resolving geological problems, and finding oil and gas, in carbonate reservoirs.

She started her career in the oil industry in 1995 with Shell Canada in their "reservoir research group", acquiring state of the art training with Royal Dutch Shell in Holland, attending several modern reef seminars, and being involved with various exploration and development projects on Devonian carbonates. Other companies she worked for include Crestar, Gulf Canada, PanCanadian, Encana, and Enerplus adding more exploration/development drills, training and field trips to her resume. She has published several papers on the topic of carbonate sedimentology and diagenesis, and regularly conducts industry courses. She has offered her consulting services since 2008 as a sole proprietor and incorporated in 2012.

Eva Drivet is a registered Professional Geologist with the Association of Professional Engineers and Geoscientists of Alberta (APEGA). She is an active member of the Canadian Society of Petroleum Geologists (CSPG) and the American Association of Petroleum Geologists (AAPG).



**David** has an increasingly alarming 22 years of geological experience in the Canadian oil patch, which amazingly, nearly all of which have focused on carbonate rocks. David completed his B.Sc. in Geology and Oceanography from the University of Southampton in 1993 and then moved to the University of Alberta to study carbonates under Dr. Brian Jones, where he became a leading light in the study of algal coatings on rocky debris, in lagoons, in the Pleistocene. Shedding the chains of academia, David moved south to make his fortune in Calgary, where, after a brief stint as a 'geological intern and dog walker', he made his mark as a writer for Canadian Discovery. There he wrote and illustrated over 80 articles, detailing new exploration across the entire WCSB. David then moved onto the true patch oil job with Devon Energy, spending ten years as an area geologist, working the carbonate fields of the Debolt at Dunvegan and Slave Point at Swan Hills, before becoming Devon Canada's Carbonate Specialist.

In 2014 David was persuaded to drop the security blanket of the big corporation to join a fledgling company with very big plans. Since then, he has been the Senior Geoscientist for Enhance Energy, and has been instrumental in the preparation of Alberta's first large-scale CO<sub>2</sub> Enhanced Oil Recovery project. At Enhance, David's generally cheap sensibilities have led him to learn new roles, including reservoir modeling, petrophysics, and Monitoring, Measurement and Verification (MMV).

David Hills is a registered Professional Geologist with the Association of Professional Engineers and Geoscientists of Alberta (APEGA). He is a somewhat active member of the Canadian Society of Petroleum Geologists (CSPG) and a fairly idle member of the American Association of Petroleum Geologists (AAPG).