



Field Course to Grassi Lakes– Devonian Leduc equivalent: New perspectives for CO₂ CCS

Instructors:

Eva Drivet, Drivet Geological Consulting Ltd.

David Hills, Enhance Energy Inc.

Post-Meeting Field Course– 1 Day: Friday May 15, 2020

Field Course Outline & Objectives:

A basic stratigraphic and structural overview of the front ranges near Banff National Park will be provided by 3 quick stops (Mt Yamnuska, Lac des Arcs, and road side view of White Man Gap). The fourth and main stop – Grassi Lakes – provides an opportunity to review the following:

1. Geological nature of the reservoir facies in Leduc equivalent outcrops, and how it applies to the CO₂ EOR and storage work done at Clive.
2. Development of secondary porosity associated with pervasive, matrix selective, dolomitization.
3. Fractures, and how they enhance permeability.
4. Lateral and vertical geometries of depositional facies and reservoir bodies (flow units and possible baffles/barriers) – how this applies to reservoir characterization and modeling at Clive for EOR and CO₂ storage.

The field trip will wrap up with a Grizzly Paw Brewery tour before heading back to Calgary.

The Devonian carbonate core workshop on May 14 is not a pre-requisite, but both the core workshop and the Grassi Lakes field trip are integrated. Analogies will be made between observations noted in outcrops on May 15 and observations from cores on May 14.

Who Should Attend:

This field trip 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 CO₂ EOR / CCUS type projects. This popular loop takes the steeper Grassi Lakes Trail up and returns via the easier gravel Upper Grassi Lakes trail, with 233 m elevation. Good for all skill levels capable of walking 4.3 km with a 233 m elevation gain (short but moderate incline). It is recommended to have footwear with traction (no sandals). Dressing in layers and for the weather is recommended. Hard hats will be provided at the Grassi Lakes location.

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

Registration Rates: (rates do not include GST)

- Early-bird CSPG member rate: \$325
- Early-bird non-member rate: \$525

Early Bird Ends: **April 24, 2020**

- CSPG Member rate: \$525
- Non-member rate: \$725

Registration Close: **May 8, 2020**

Maximum registrants: 25

CPD: 9.5

Registration includes: Transportation, lunch and Grizzly Paw Brewery tour (includes a pint).

Time: 8:00am– approximate return time 5:30pm

Meeting location: On 1 street SE, on the NE corner with 9th avenue by Telus Convention Centre



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 CO₂ 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).