



NORTHWEST GEOLOGICAL SOCIETY

A regional association of professionals, students & others interested in geology
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December, 2019 Newsletter

Volume 33, Number 8



December 10 Program Speaker

Speaker: Ted Doughty, *PRISEM* Geoscience Consulting

Title: The Unconventional Bakken Oil Accumulation

Abstract: The Late Devonian Bakken and subjacent Three Forks Formation of the Williston Basin, North Dakota, Montana, and Saskatchewan host one of the world's largest hydrocarbon resources and were pivotal in the on-going unconventional revolution in the petroleum industry. The Bakken Formation contains most of the hydrocarbons and is composed of oil-charged shallow marine clastics (Middle Bakken) sandwiched between two organic-rich anoxic black shales (Upper and Lower Bakken) that are the hydrocarbon source. This unique tripartite stratigraphy was deposited on a low-relief, but active, platform near the western edge of North America and provides 1,000's of square kilometers of potential resource. The oil accumulated in the very low permeability middle Bakken member as hydrocarbons were generated and restricted from migrating long distances out of the maturation cell. Although oil was known in the Bakken since the 50's, it took horizontal drilling and frac'ing in the early 2000's to release the oil stored in these low permeability reservoirs. The technological advances created by the Bakken are truly astounding. Operators routinely 'hit' a 10' vertical window at 20,000' and pump millions of pounds of sand into the reservoir at those depths. Unlike conventional wells, production declines rapidly (>60% the first year) so continuous drilling is required to maintain production levels, making these plays very sensitive to oil price and capital.

5:30pm: No-host social hour

6:30pm: Buffet dinner

7:30pm: Speaker program

All are welcome to attend –
reservations are required
if coming for dinner.

► [Reservations here](#) 

PROGRAM DINNER RESERVATIONS: please make dinner reservations at www.nwgs.org by the **Thursday prior to the meeting** (now capped at 60 people due to room capacity and fire code, so reserve early!). Once you have submitted your reservation, you may pay online using your debit or credit card or your PayPal account (follow the online prompts), or by mailing a check or money order to [Northwest Geological Society, 4616 25th Ave NE #397, Seattle, WA. 98105](#) (must be received by the **Thursday prior to the meeting**). NWGS member dinner: \$45; non-member dinner: \$55; late registration: \$55, student dinner: \$20.

MEETING LOCATION: [Silver Cloud Hotel Seattle—University District, 5036 25th Ave NE, Seattle, WA 98105](#). No-host social hour is in the Ag47 Bar & Bistro. Please check in at the Secretary/Treasurer table to get your name tag, which will be your dinner ticket. **Dinner & speaker are in the Husky Dining Room downstairs.** Parking is free. See [Google Maps directions](#).

Upcoming Speakers and Field Trips

January 14: Dr. Jack Caplan-Auerbach, WWU, End of an Era: The 2018 Eruption of Kilauea Volcano, Hawai'i

February 11: David Williams, Naturalist & Author, Stories in Stone: Travels Through Urban Geology

March 10: Dr. Gerald C. Bryant, Dixie State College, Ancient Soft-sediment Deformation Features in the Navajo Sandstone

April 14: TBA

May 12: Dr. Sean Mulcahy, WWU, Subduction Initiation and Early Evolution of the Easton Metamorphic Suite, Northwest Cascades, Wash.

Spring Field Trip: Skye Cooley (Idaho Geol. Sur.), possible spring field trip, Othello area looking at calcrete deposits and their implications regarding Yakima fold belt tectonism and the late(?) rise of the Cascade Range, April .24-26, 2020 (dates pending confirmation).

If you would like to volunteer to give a talk or lead a field trip for NWGS, please contact President Elect [Katie Brower](#).

Please see the [NWGS website](#) for detailed announcements.

Contact webmaster [Julie Masura](#) if you have any announcements to post on the website.

Announcements

- **2020 member dues are due NOW!** Payment may be made at nwgs.org or at each meeting.
- **Reminder: the new meeting venue is the [Silver Cloud Hotel—University District](#), (see PROGRAM DINNER RESERVATIONS, p. 1 for details).**
- To ensure you have a space due to room capacity and fire code at the new venue, **please make your dinner reservations early! Dinner reservations will be closed at 60 people.**
- **[Tom Bush](#)** is leading a geology field trip to south-central Utah for Pierce College over Spring Break, 2020 that is open to the public (March 26-April 4, \$839). Please contact **[Tom](#)** for details.
- **Next Board of Directors meeting: January 14, 2020, 4:30 P.M., [Silver Cloud Hotel](#).**
YOU would like to be involved!

Photo Spotlight



Outcrop photograph of the Middle Bakken siltstone (tan) underlying the Lodgepole Formation limestones (gray) in western Montana (T. Doughty photo).

About NWGS

The [Northwest Geological Society](#) is a non-profit educational organization which provides a forum for information and discussion on Northwest geology and related topics. The Society sponsors talks by leading academic and professional geologists at its monthly meetings, conducts field trips to locales of regional geologic interest, and publishes meeting summaries and field guides based on those activities. Membership is open to anyone interested in regional geoscience issues.

Program meetings are the 2nd Tuesdays, October through May at the [Silver Cloud Hotel Seattle-University District](#). Anyone may attend the speaker program, but a reservation is necessary for those wanting dinner (see 1st page).

Field trips (members only): The Society sponsors two overnight field trips each year, in the fall and the spring, to locales of regional geologic interest.

Membership is open to anybody with an interest in geology. **Annual dues:** Professional: \$55; Student: \$10. **To join or pay annual dues:** go to www.nwgs.org, or mail a check or money order to [Northwest Geological Society](#) 4616 25th Ave NE #397, Seattle, WA. 98105. Please include your name, address, home phone, email, and employer/affiliation (if any). Please visit [About NWGS](#) for more details.

Recommended Readings

Gutschick, R.C., McLane, M., Rodríguez, J., 1976, Summary of Late Devonian–Early Mississippian biostratigraphic framework in western Montana, Montana Bureau of Geology Special Publication 73, pp. 91–124.

Robinson, J.W., LeFever, J.A., and Gaswirth, S.B., Eds, 2011, The Bakken-Three Forks Petroleum System in the Williston Basin, Rocky Mountain Association of Geologists, Denver, http://archives.datapages.com/data/rocky-mtn-geologist-pubs/data/002/002001/1_rmag-bk0020001.htm (a compendium of 21 papers).

Please send your reading recommendations to Newsletter Editor [Tom Bush](#).

To report a change of email or postal address or request to be removed from mailings, notify Membership Chair [George Bennett](#). Questions or comments? Contact President [Heather Vick](#).

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