



The Rock Record –April 2024

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Please contribute to the SGS
Newsletter

The SGS Newsletter is produced by the SGS executive. Letters, announcements, notices, comments, photos, news and information about SGS members, etc. are always welcome. Call an executive member or write to us at:

SGS e-mail address:

sask.geol.soc@hotmail.com

SGS Website:

www.sgshome.ca

All advertising inquiries should be directed to **Brittany Laing**

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Saskatchewan Geological Society Luncheon Talk

Monday, April 15th, 2024

The Role of Geoscience in Evolving Regulatory Requirements for Commingled Abandonment

Dan Palombi

Alberta Energy Regulator/ AGS

Bushwakker Arizona Room (front room)

Lunch: 11:45 am

Meeting: 12:00 – 1:00pm

Members \$20.00 Cash only

Please RSVP to Gavin Jensen (Gavin.Jensen@gov.sk.ca)

by NOON, Thursday, April 11, 2024

Thursday, May 23, 2024

Lithium Potential in Potash: Core talk at the subsurface lab

Peter Hill

Saskatchewan Geological Survey, Ministry of Energy and Resources

Subsurface Geological Lab examination room

Pizza included.

Members FREE

12:00am-1:00pm

The Role of Geoscience in Evolving Regulatory Requirements for Commingled Abandonment

Abstract

Commingled hydrocarbon production occurs when oil or gas from more than one geologically distinct zone is produced in an unsegregated manner within a single wellbore. Over 73,000 wells are producing oil or natural gas in a commingled manner across Alberta, all of which will eventually require abandonment. When operators abandon these wells, they are required to follow AER's technical requirements detailed in *Directive 020 – Well Abandonment*. The intent of these requirements is to prevent environmental impacts through gas or fluid migration, and to ensure resource equity and conservation is achieved amongst current and future operators. *Directive 020* allows operators to submit non-routine requests to seek variance from the abandonment requirements for commingled zones in a well when there is demonstrated low risk from unsegregated abandonment. Estimated cost savings of such variances could be substantial to Alberta's oil and gas industry, potentially enabling a large opportunity for AER and industry to increase the number of inactive wells that are abandoned and overall reduce liability. Hence, the AER/AGS has been conducting targeted geoscience projects since 2015 to: 1) derive a risk-based methodology applicable across the province; and 2) undertake detailed case studies in large gas fields and CBM pools of southeastern and central Alberta respectively, to evaluate if the regions have no intolerable increase in risk from allowing widespread commingled abandonment. For stratigraphic intervals that are approved for commingled abandonment, groundwater and formation fluids may flow from one aquifer to another establishing hydraulic communication through perforated intervals in unsegregated commingled wellbores.

One of our objectives was to devise an approach by which AER and industry could quickly ascertain the level of subsurface risk and concerns associated with potential commingled abandonment of various pools throughout the province. A risk-ranking screening tool was developed using the Alberta Table of Formations to qualitatively display the relative probability of risk and consequence from commingled abandonments. This derivation uses knowledge of the regional geology and hydrogeology of the Alberta sedimentary basin to provide a stratigraphic zonation of groups and formations. Our second objective has been to conduct detailed geoscience studies to determine the feasibility and consequence of defining routine commingled abandonment regions allowing pool-scale commingled well abandonments. If favourable subsurface conditions are deemed to exist for commingled abandonment, then thick successions of depleted hydrocarbon zones and aquifers will be left in a commingled geobody. This presentation will provide an overview of our province-wide screening tool for assessing subsurface risk from commingled abandonment. Two case studies will be shared where groundwater-gas migration analysis was used to understand potential implications for commingled abandonment in large, geologically complex, gas fields, and requirements for resource preservation and environmental protection.

Dan Palombi joined the Alberta Geological Survey in 2010 as a hydrogeologist and currently works as a senior advisor in groundwater and energy geosciences. His role involves leading a provincial-scale program on the study, mapping, quantification, and reporting of Alberta's groundwater resources. Dan's focus is on designing and implementing applied research projects focused on achieving goals that are of high importance to regulators and policy-makers by providing relevant, impactful geoscience to support regulatory and environmental issues. The majority of his work applies regional groundwater flow principles and methods to oil and gas well abandonment, CCUS, regional hydrogeological characterization, and geothermal resource appraisal studies. Dan received his B.Sc. in Geology and M.Sc. in Hydrogeology from the University of Alberta.

President's Message

I'm excited to announce we are bringing back the Rock Record and hopefully this is the first of many to come!

First, I would like to acknowledge a few Society Members. I would like to offer congratulations to our most recent Geoscience Honour Roll inductees, Dean Potter and Dr. Glen Caldwell. Both honours were presented at the recent 2023 Annual General Meeting, which was very well-attended and an enjoyable night for all. This is in large part due to the efforts of our hard-working volunteers who put in a remarkable amount of work to make it a success.

Following a motion at the AGM, the executive would like to announce we have confirmed with APEGS that our Luncheon Speaker Series can be used as Formal Continuing Professional Development hours. So, for Society members in good standing who attend in-person, we will issue a certificate that can be used as proof of formal hours. For members who attend on-line, we can e-mail a certificate if requested through the society's email (sask.geol.soc@hotmail.com). Members attending on-line will need to use their full names when logged into the presentation so we can confirm their attendance and membership status.

Finally, I encourage everyone who hasn't done so already to renew their membership as soon as possible! The benefit of membership is receiving notifications of upcoming luncheon speaker programming, news of upcoming events such as the golf tournament or field trips, CPD certificates confirming formal training hours, and the Rock Record! There will be no further notification to unpaid members after April 5, so please go to our website and renew your membership! It's only \$35 for an active membership:

[Click to Renew](#)

Just a note, some members received a renewal notice in error, so please disregard.

Please feel free to provide feedback or suggestions you think would benefit the Society. I look forward to a productive year for our Society in 2024!

Dan Kohlruss

News and Events

2024 Curling Bonspiel

Fun-filled Day at Callie Curling Club Bonspiel with Saskatchewan Geological Society!

Gather 'round, curling fans and geology enthusiasts alike, for a delightful recap of the recent bonspiel extravaganza at the Callie Curling Club! On March 16th, the club was buzzing with excitement as the Saskatchewan Geological Society hosted their annual bonspiel!

With five teams hitting the ice for a friendly round-robin tournament, the atmosphere was positively electric. Amidst the friendly competition, Team C⁴ managed to steal the show, clinching the title of bonspiel champions! Congratulations to Kathy Bethune, Leslie Robbins, Meghan Black, and James McWilliams for their stellar performance, team costumes and infectious team spirit.

The Saskatchewan Geological Society's Annual Bonspiel proved once again to be a highlight of the winter season. Here's to many more bonspiel adventures to come!

-Taylor Fairman



2024 SGS Field Trip: Save the date

This year's field trip will be to Yellowstone National Park **September 9 to 13**, so please save the date! Registration is not yet open so active members should keep their eyes peeled for the notification coming in the following weeks.



Photo from sagelodge.com

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2024 SGS Ed Outreach School Lecture

2024 SGS Ed Outreach School Lecture will be held this year at Campus Regina Public on May 8th and 9th with the theme of Saskatchewan's Critical Mineral Superheroes.

This year we will have two special guest speakers including Dr. Kevin Ansdell and Dr. Megan Gilbert and hundreds of elementary students in grades 3/4 and 7/8 who will get to experience the exciting hands-on science stations and real geologists to learn more about rocks, earth science and the importance of critical minerals in our everyday world. There will be morning and afternoon sessions each day with a total of 15 stations per session for potash, uranium, lithium, helium and copper.

Are you a geoscientist and interested in volunteering at one of the science stations at this event? If so, reach out to Murray Rogers at mcrogers123a@outlook.com. We look forward to coming together over these two days of fun and learning to unite and support our community and promote geoscience education to our students and emerging geoscientists of Saskatchewan!

-Nadene Joy

Volunteers Needed

The Society is organizing elementary school talks and activities on May 8th and 9th in Regina. The topic is Critical Minerals in Saskatchewan. Dr. Megan Gilbert of the Saskatchewan Geological Survey will be speaking to grade 3 and 4 classes on May 8th. Dr. Kevin Ansdell of the U. of Saskatchewan Geology Department will be speaking to grade 7 and 8 classes on May 9th. There will be morning and afternoon sessions each day. Each of the talks will be followed by activity stations related to the subject where the students can participate in hands-on activities. There will be 15 stations per session, three groupings with each having a station for potash, uranium, lithium, helium, and copper. We need a volunteer at each station to help guide the students.

Who do we need to volunteer? Anyone with a science or educational background including students.

Where: Campus Regina Public School, 1069, 14th Avenue East, Regina.

When: May 8th and 9th: 9:00 a.m. to 11:30 a.m. and 12:30 p.m. to 3:00 p.m. each day.

Why: To teach young students about science and Saskatchewan's mineral resources.

You can volunteer for just one, some or all four of the sessions. Lunch will be provided to the volunteers at the school.

If you have questions or would like to volunteer? Contact Murray Rogers at mcrogers123a@outlook.com.

SGS and D.M. Kent Club (U of R Geology Student Society) Spring Mixer

An SGS and D.M Kent Club mixer was held at the University of Regina's Owl on Thursday March 28th. Between 30-35 students and active members turned out to the event. There were some graduate students posters displayed as well. The society is planning to have 2 events per year with the D.M Kent club, one in the fall and one in the spring.

-Gavin Jensen