



Newsletter of the Utah Geological Association

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<http://utahgeology.org>

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January UGA Luncheon Meeting
January 14, 2008

Coal-Mining Seismicity in Utah—A Primer and Overview

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Abstract

A first-order feature of the seismicity of Utah is the association of mining-induced seismicity (MIS) with areas of extensive underground coal mining in the Wasatch Plateau (WP) and Book Cliffs (BC) coalfields. Thousands of seismic events up to magnitude 4.2, most of them smaller than magnitude 2.5, have been instrumentally recorded in this region since the 1960s by the University of Utah's regional seismic network. The MIS results from stress redistribution from both longwall coal extraction and room-and-pillar workings and includes damaging "bumps" or "bounces" associated with violent failure of rock in the direct vicinity of mine openings as well as seismic slip on geologic structures hundreds to thousands of meters away. The seismically recorded magnitude of a mine tremor does not simply correlate with impact in a mine. There is a complex interplay between geology, mining rates and procedures, and observed mining seismicity. Variable factors conducive to coal bump problems in the WP-BC region are known to include large gradients in overburden depth due to ridge-and-canyon topography, the presence of massive sandstone units affecting average roof conditions, strong roof and floor strata near the coal seam, sandstone channels in the immediate roof, strong coal-seam conditions, and the presence of faults and shear zones. Using the August 2007

Crandall Canyon mine failure as a point of reference, our dual seismology/mining engineering presentation aims to explain the basics of MIS in the WP-BC region—including how coal is mined in this region, the spatial and temporal association of MIS with mining activities, mechanisms and maximum expectable size of MIS, and implications for mining practice.



Biographical sketches: Walter Arabasz (Ph.D., California Inst. of Technology, 1971) and Kim McCarter (Ph.D., Univ. of Utah, 1972) have collaborated on studies of mining-induced seismicity in Utah since the mid-1990s. After earlier studies and work in California, Chile, and New Zealand, Walter has been at the University of Utah since 1974 and is the Director of the Univ. of Utah Seismograph Stations (since 1985) and Research Professor of Geology and Geophysics. He recently received the John Wesley Powell Award from the USGS for his leadership and efforts, both nationally and at the state level, in seismic monitoring and earthquake risk reduction. Kim began his career as a mining engineer with Kennecott Utah Copper Division where his duties included slope stability and mine planning at the Bingham Canyon mine. He accepted a faculty position with the Univ. of Utah's Department of Mining Engineering in 1978 and has served as the Department Chair for the past 25 years. He is a Life Member of the Rocky Mountain Coal Mining Institute and a Distinguished Member of the Society for Mining, Metallurgy and Exploration. Both Kim (as chair) and Walter serve on the Technical Advisory Committee to the Utah Mine Safety Commission.

***** **LUNCHEON LOCATION** *****

The January luncheon meeting will be at 12:00 noon, **Monday, January 14th**, 2008, at the Department of Natural Resources, 1594 W. North Temple, Salt Lake City. The DNR building is just east of the intersection of Redwood Road and North Temple. Luncheon attendees can park anywhere there is space available, including the visitor parking area in front of the main entrance and the employee's parking area. The luncheon will be held in room 1050.

Please make your reservations (537-3300) no later than 4:00 p.m. on Friday, January 11th.

Click to make reservations for the Luncheon Meeting by sending email to reservations@utahgeology.org.

Lunch at 12:00 noon. Meeting begins at 12:30. Cost: \$10.00 w/ reservations; \$5.00 for students. Cash or Checks only please.

President's Message

I've spent a few days over the past month in the mountains of central Utah. While I've enjoyed the time outdoors, watching herds of elk, deer, and turkeys (and one bull moose), I am reminded why winter is NOT the time for field work in Utah. These days are best spent writing reports, preparing maps, and planning for warmer days ahead. I hope you all have plenty of things to keep you busy inside!

With the new year comes the time for reflecting on the past year and planning for the year ahead. While I don't usually make a lot of resolutions, I do have some goals. I plan to spend at least one more day camping this year than I did last (23 nights in 2007). I also plan to invest more time with family, friends, and neighbors. Finally, I plan to express thanks more often to the people who have made a difference in my life. In that light, I thank the many of you have expressed support to me and to the UGA this year. Your continuing support is important, both in attendance and in furthering the ideals of the UGA. Please remember to help in the recruiting effort and I hope to see you at our next lunch meeting on January 14th!

Brett Mustoe

Welcome New UGA Members

The UGA would like to WELCOME the following new, active member and student associate member:

Erich Petersen - Professor, University of Utah

Peggy Reeder - Student, University of Utah

Stephanie Carney
UGA Secretary

Association for Women Geoscientists Salt Lake Chapter

19th Annual Scholarship Benefit

Silent Auction & Wine Tasting

Saturday April 12, 2008

7 to 10 p.m.

The Mill at Tracy Aviary

Liberty Park, Salt Lake City

If you have donations, please contact April Abate-Adams: aabate@secor.com



Salt Lake Section of the Society of Petroleum Engineers

The Salt Lake Section of the Society of Petroleum Engineers will host a meeting on Thursday, January 10th at the Department of Natural Resources, 1594 West North Temple, Room 1060. The presenter is **Alberto Di Lullo** of EniTecnologie. He is a Society of Petroleum Engineers Distinguished Lecturer and will be speaking on the *Low-Cost, Non-Invasive, Remote Pipeline and Well Inspection Techniques*.

Participants should plan on gathering and paying for lunch starting at 11:30 a.m.; the presentation starts at noon. The cost is \$15.00 for members and guests, \$8.00 for students. Please RSVP to Phil Cowdery, email: pcowdery@vortexflowllc.com, slcspe@msn.com or (801) 523-9619 by close-of-business on Monday, January 7, 2008. Please try to adhere to the deadline for reservations in order to keep costs down.

Call for Papers

RMAG & UGA 2008 Fall Symposium

on

Hydrocarbon Systems and Production in the Uinta Basin, Utah

In the 15+ years since the last major symposium on the Uinta Basin was published (Fouch et al., 1992), the basin has been the focus of numerous exploration and development efforts that have richly rewarded individuals, companies, tribes, and the State of Utah. Thus, the time is ripe for another look at the various factors that make this hydrocarbon-rich basin so prolific.

RMAG and the Utah Geological Association (UGA) plan to combine forces to publish a 2008 Symposium focused on various aspects of stratigraphy, structure, hydrocarbon systems, reservoir case histories, and field development in the basin. Toward this goal, the RMAG and UGA are soliciting abstracts for possible inclusion in this symposium.

Co-editors of the volume for the RMAG are Donna Anderson (EOG Resources and CSM; dsanders@mines.edu), Edmund R. "Gus" Gustason (El Paso E & P Company; edmund.gustason@elpaso.com), and Mark Longman (Questar E & P; mark.longman@questar.com). Representing the UGA as a co-editor is Craig Morgan with the Utah Geological Survey (craigmorgan@utah.gov).

Authors who are interested in contributing a paper should submit a title and short description or abstract (one paragraph is sufficient) by **January 31, 2008**. Submit an electronic copy of the proposed title, abstract/statement, and contact information to any of the editors.

Complete format requirements will be provided to authors by February 15, 2008 upon acceptance of the abstract. In order to publish the symposium in the Fall of 2008, preliminary manuscripts are due March 31st. Completed manuscripts incorporating comments by the reviewers will be due **June 15, 2008**. Manuscripts should be limited to about 20 final layout pages including figures and references. Text should be less than 15 double spaced pages not including references. Because the symposium will be distributed in DVD format, we welcome well-illustrated manuscripts that use color and large-format figures.

Reference

Fouch, T.D., V.F. Nuccio and T.C. Chidsey, Jr., eds., 1992, Hydrocarbon and Mineral Resources of the Uinta Basin, Utah Geological Association Guidebook 20, 472 p.

Association of Engineering Geologists Rocky Mountain Section

The AEG monthly dinner meeting is Thursday, January 10th. Dr. David Chapman, Professor of Geophysics and Dean of the Graduate School at the University of Utah will present:

Global Warming: More Than Hot Air. What do we know? What do we not know? What can we do? What should we do?

Meeting place/time: ROCKY MOUNTAIN PIZZA, 3977 South Wasatch Blvd., Salt Lake City (north of Dan's grocery store in the Olympus Hills Shopping Center). The Dinner/Social is from 5:30 to 6:30pm, and the presentation is from 6:30 to 7:30pm.

This year you need to R.S.V.P. with Sheila Kluck at skluck31@gmail.com by 3 pm on the day of the meeting for a reservation. The costs for the dinner meeting are as follows: students, \$4; members, \$12 w/reservations, \$13 w/out reservations; non-Members, \$14; and now you can come for the talk for only \$5.

UTAH GEOLOGICAL SURVEY

Job Opening: **GIS GEOLOGIST**
Opens: **December 19, 2007**
Closes: **January 11, 2008**

The Utah Geological Survey, a division of Department of Natural Resources, has a GIS Geologist position open in the Energy and Minerals Program located in Salt Lake City. Requires a bachelor's degree in geology and strong background and skills in GIS applications. Must be proficient in ArcView, ArcGIS, and ArcINFO, and have strong skills with GIS database design, management, and metadata preparation and standards. Responsibilities include GIS support of energy and mineral resource studies, and design and management of GIS geologic databases. To apply, or for more information, go to "open jobs" at <https://statejobs.utah.gov>. Closing date: 1-11-08.

BLM Geologist position in Montrose, CO

The Bureau of Land Management has a Geologist position (GS 11) open in their Uncompahgre Field Office located in Montrose (CO). For persons with U.S. Government status, the announcement is CO-Merit-2008-0041. For all others, the announcement is DO-DEU-2008-0012. Relocation expenses are included. For more information contact Barb Sharrow at 970-240-5315.

UGA VOLUNTEERS

UGA Board

(unless otherwise indicated, area code is 801)

2008 President	N. Brett Mustoe brett_mustoe@urscorp.com	904-4000
2008 President-Elect	Tom Faddies tomfaddies@utah.gov	538-5100
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Publicity	Laura Springsteen lauraspringsteen@kennedyjenks.com	474-9615
Social/Recreation	Roger Bon rogerbon@utah.gov	537-3363

AAPG House of Delegates

Term ends 2006	Don Harris dharris@sinclairoil.com	524-2912
Term ends 2006	Craig Morgan craigmorgan@utah.gov	537-3370

UGA Web Site

<http://www.utahgeology.org>

Webmaster	Bill Case billcase@utah.gov	537-3340
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UGA Newsletter

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