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THE ENERGY MINERALS GEOLOGIST

Newsletter of the Energy Minerals Division
of the American Association of Petroleum Geologists

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APPEAL FOR SUPPORT OF EMD BY MEMBERS

Dear EMD Members:

The relative stagnation of the Energy resources sector of our economy has had an obvious effect on both the resource industries and the professions that support them. Yet resource production goes on and we cannot use the present climate as an excuse to withdraw and decrease the energies we devote to improving the science used in resource exploration and development and to the professional activities that support this science.

The EMD Executive Committee has been considering ways to stabilize EMD finances and implement a long-range plan that reflects the needs of our members and the realities of the energy resources business today and in the foreseeable future. We have instituted a formal Finance Committee to prepare budgets and monitor spending, cutting operating costs wherever possible and examining ways to develop income through our commodity programs. We agreed that the vitality of our programs and the financial health of EMD are going to depend on the willingness of our current members to supply the additional financial resources needed to bring stability to our budget based on their enthusiasm about their profession and their interest in improving what EMD can do for them. Growth in income based on major growth in membership simply is not a realistic basis for planning right now.

It is our feeling that we can avoid shortfalls in support of essential services and develop plans for new activities with their own basis of support if EMD members make a reasonable, one-time, voluntary contribution to a fund for this purpose. This approach gives us a chance to demonstrate and measure the vitality of our organization. In short, if members care about EMD and want to see it stabilize, plan, and grow, they will give toward that goal. Therefore, we are launching a one-time gift appeal at this time and are asking members to send their contributions to AAPG Headquarters (marked "EMD Fund" to distinguish them from normal contributions to AAPG). I hope YOU will vote for stability, followed by planned growth in services, through a generous contribution to EMD.

Chip Groat
Vice-President/President-Elect
and Chairman, Finance Committee

PRESIDENTIAL EPILOGUE

Being EMD President confronts one forcefully with the health and needs of our Division.



Whereas smothering the negative with the positive would have been safer, I felt obliged to concentrate on our problems. Defining our capabilities in terms of our purpose, interests, and history, seemed the best preliminary to specific measures for confronting them

and contributing to our progress. Realism may be distressing, but it is healthy.

The fluctuation of EMD fortunes with the rise and fall of uranium and the transition to coal (October 1993 issue of *The Energy Minerals Geologist*) was interpreted by a few as evidence of an organization floundering for a firm purpose. Thus, commodity-oriented organizations should remain sharply focused. Conversely, to me this history demonstrates a favorable broader focus on all energy fuels, a class of use of minerals. The Energy Minerals title for the Division was well chosen. Shifting focus to follow economic emphasis exactly conforms to our title charter and is our strongest attribute. It best defines our purpose as well as direction. Rather than worrying about which slot we belong in, or shifting slots with the change of commodity prosperity, EMD should remain broad-based, capable of filling the vacuums created as each commodity cycles from favor.

Few professional societies have been able to maintain either the narrow (e.g., AAPG) or very broad (e.g., GSA) scope originally intended, but have drifted toward a blend of specialization and generalization, dictated by the need to survive through changing technology and economy. To remain static in a changing environment is to die.

Membership dominance will always follow commodity emphasis, but we can build a larger Division by keeping focus broad. The healthy commodities can carry the less popular. Our emphasis should continue to be on building better expertise across the spectrum and reporting on the constantly shifting balance. Our *Energy Issues* quarterly, which is past the concept

continued on page two

PRESIDENTIAL EPILOGUE

(continued from page one)

stage and under further development as an actual publication, should be an excellent addition.

The Division of Environmental Geosciences encompasses all aspects of environmental protection. Yet the tuning of economic production to environmental requirements is sufficiently different technically and economically for each commodity such that specialist training must vary. Increasingly, explorationists, evaluators, and operators must know environmental technology and regulations. We should participate with DEG by promoting interdivision cross-fertilization and membership.

EMD's greatest problem continues. Thanks to inflation, income from never-escalated (until now) dues has been drowned by rising operating costs, and we have not adequately supplemented dues with income from EMD publications and activities. Following initial growth, membership has fluctuated with commodity health between 1,600 and 2,000 members, apparently capped by a ceiling representing about 5-7% of AAPG membership. As of April 30, 1994, EMD membership was 1,884. This relatively stationary membership has kept dues income equally static. Even with the 50% increase instituted this year, EMD dues still are significantly below the all-society average and, at the 2,000 member level, still cannot bring economic viability. This partly is because, like other AAPG divisions, our yearly costs begin with the annual charge for AAPG Headquarters maintenance plus 100% overhead. For the first nine months of FY 1994 this charge comprised 107% of dues and 82% of total income. I estimate it varied from 40% to 80% of EMD total income over the last few years. Assuming a static historical membership of 2,000, dues would have exceeded expenses in only six out of our 16 years. Other income has barely supported minimal activities such as this newsletter. Our "breakeven" philosophy for earning ventures has not helped (even though it has benefitted members by keeping cost for events and books low), permitting underestimation of unforeseen costs.

Escape from this slippery slope has required revision of our operating philosophy and plan and needs a significant infusion of capital (dues and/or contributions). Rather than raise dues again so shortly after the last rise, for the infusion we chose the alternatives of an intensive membership drive and the one-time appeal for voluntary contributions now being made by Vice-President/President-Elect Chip Groat (see accompanying item in this newsletter issue). However, to operate as we have, viability must depend on income from products and activities. Our best long-term help is AAPG's offer to finance approved, expectedly viable projects within the Long-Range Development Plan described in former newsletters. We now must concentrate on generating and undertaking worthy projects!

The Plan by itself is worthless without activation. A potential obstacle is bimodalism in EMD: an aggressive active nucleus within a silent passive majority. Though the bimodal distribution is typical of all populations and endeavors, ours appears particularly distinct. Our core seems to continue with the same people and to compose only a small fraction of the membership. Many of EMD's problems could be resolved more simply and easily if this hard core were to be enlarged. Some degree of bimodalism may be inherent, but so also should be the responsibility of the members. Like the clichéd chain, an organization cannot produce more than the contributions of its members. Also, like the clichéd fasces of the Romans, the bundle is stronger than a few rods. I appeal to our passive members to join the hard core for a better, more productive, and more prosperous EMD.

We are progressing significantly toward our goals. The committee framework has been partially restruc-

tured and enlarged by Liaison, Finance, and Development Plan committees. The way is paved for coal geologist certification. We formalized the earlier development plan into the present Long-Range Development Plan, already expanding. AAPG approved in principle the financial support of the Plan until EMD becomes self-sustaining. Two new projects within the Plan (the *Energy Issues* quarterly and advertising in *The Energy Minerals Geologist*) have begun, and proposals are being submitted to AAPG for two more (a volume on radon and a CD-ROM photo atlas of coal geology in cooperation with The Society for Organic Petrology). The future will be as bright as we make it!

I wish to thank EMD for the opportunity to serve it, former officers for orienting me, AAPG Staff for training yet another President from scratch, and especially the EMD aggressive core for facilitating my efforts. My year has rewarded me with new friendships I know will last, many memorable experiences, and much education. I have become a better member. Best, I enjoyed it. Finally welcome to our new President Chip Groat and other new officers and councillors. May they have the best of success!!

John W. Gabelman
President 1993-1994

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COAL GEOLOGIST CERTIFICATION FORMALIZED!

START-UP VOLUNTEERS NEEDED

In order to provide members with more benefits and services, EMD has been working towards making peer-review, professional certification available for coal geologists (Certified Coal Geologist; CCG). This certification is designed to mirror the AAPG's Certified Petroleum Geologist program. On Sunday June 12, 1994, the AAPG House of Delegates approved changes in AAPG's Bylaws to allow certification of non-petroleum geological specialties through the Division of Professional Affairs (DPA) in conjunction with other sponsoring divisions. The EMD Executive Council originally selected coal geology for certification as it was felt that there are enough coal geologists to make the



program feasible. As interest warrants, other geological specialties, such as remote sensing, will be considered. The bylaws changes were enacted with generic language to allow maximum flexibility in expansion of the certification program to include any geologic specialty encompassing a significant portion of the AAPG's membership.

Whereas there still are a few minor administrative hurdles to surmount prior to implementation of coal geologist certification, now is the time to set the process in motion and finish erecting the needed infrastructure. Several EMD members already have expressed an interest in serving in some capacity, but there

still is ample room for additional volunteers. Initially, due to a dearth of CCGs, the EMD Certification Committee is seeking qualified members, whether coal geologists or not, to help jump-start the program. Any "coal-sensitive" CPG interested in aiding this important initiative is encouraged to volunteer!

REQUIREMENTS FOR CERTIFICATION AS A COAL GEOLOGIST:

- 1) a 4-year or advanced degree in geology from an accredited college or university
 - 2) 8 years broad-based experience in coal geology
 - 3) 3 CCG (or equivalent) sponsors able to comment on the applicant's professional abilities and experience
 - 4) 3 non-geologist sponsors able to attest to the applicant's personal integrity
 - 5) must be a member in good standing of AAPG
 - 6) must be a member of EMD for at least 1 year prior to application for certification
- If you are interested in receiving an application, serving in some capacity, or in receiving more information on this program, contact AAPG Headquarters (918-584-2555) or me at: West Virginia Geological and Economic Survey
P.O. Box 879
Morgantown, WV 26507-0876
Phone 304-594-2331
Fax 304-594-2575.

B. Mitchel Blake
Coal Geologist Certification Chair

CALL FOR PAPERS: AAPG ANNUAL MEETING IN HOUSTON IN 1995

Plan now to join us March 5-8, 1995, in Houston, Texas - technology center for the World of Petroleum - for the 1995 Annual Convention of AAPG and SEPM. Together with the Division of Professional Affairs, EMD, Division of Environmental Geosciences, and your host, the Houston Geological Society, they invite you to participate in what promises to be an exciting meeting.



Authors are invited to submit new and original work for either oral or poster sessions. Oral presentations will be 20 min. in length. Poster sessions again will follow the all-day format of the past few years. Computer displays and/or videos are encouraged to enhance the poster presentation. Selections of abstracts will be based on geologic significance, application to the session topics listed in the Call for Papers, and relevance to the convention theme. Contact AAPG Headquarters (918-584-2555, Fax 918-584-) for a complete list of planned oral and poster sessions for this meeting. Also, this

year the abstracts must be submitted on a special form in camera-ready format! You must obtain this form from AAPG before you submit an abstract!!

Special attention by EMD members is suggested for the three oral and two poster EMD sessions planned for the Houston meeting. The sessions have the following titles:

- O1 - Exploration Results and Environmental Monitoring from Remote Sensing Systems
- O2 - World of Coal and Coalbed Methane
- O3 - Environmental Monitoring and Remote Sensing (joint session with DEG)
- P1 - Worldwide Energy Minerals
- P2 - Surface Exploration and Remote Sensing

Further information on EMD oral sessions can be obtained from Robert H. Barton, Spectra Resources, 11111 Wilcrest Green, Suite 130, Houston, TX 77042, Phone 713-974-6061, Fax 713-974-6461. Further information on EMD poster sessions can be obtained from John Stiepewich at the same address and numbers.

H. Robert Hopkins
EMD Vice-Chairman, 1995 Meeting

RECENT PUBLICATIONS OF INTEREST

- 1) Flanagan, Ruth, 1994, Earth F/X: Earth, v. 3, no. 5, p. 50-55. (Space shuttle photographs of Earth.)
- 2) Kuehn, Kenneth W., 1994, Beneficiation of ultrafine and micronized coals through oil agglomeration: *Energia*, v. 5, no. 2, p. 1-3.
- 3) Pashin, Jack C., 1994, Coal-body geometry and synsedimentary detachment folding in Oak Grove coalbed methane field, Black Warrior Basin, Alabama: *AAPG Bulletin*, v. 78, no. 6, p. 960-980.
- 4) Sloss, L.L., and I.M. Smith, 1993, Organic compounds from coal utilization: *IEA Coal Research Publication IEACR/63*, 69 p. (avail. from Ms. Theresa Wiley, Univ. of Kentucky, CAER, 3572 Iron Works Pike, Lexington, KY 40511-8433, Telephone: 606-257-0308, Fax: 606-257-0302)

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INFO ON THE EMD ECONOMICS COMMITTEE

The Economics Committee's charter is to encourage presentations and publications in energy economics, including statistics and developments in energy minerals. The committee organized the oral session on "Future of Energy - An Energy Minerals Perspective" at the Denver meeting, and another blockbuster session is being planned for the 1995 Pacific Section-AAPG meeting in San Francisco.

The proposed *Energy Issues* quarterly, which President Gabelman refers to in his Epilogue above, also was initiated by this committee. The idea is to present both popular and refereed papers on energy economics (concentrating on the upstream end of the process). It will include statistics and progress reports on the energy minerals, an enhancement of annual reports that had been included in the AAPG Bulletin annual review issues.

Committee membership is open to ALL interested AAPG members. Ex officio and enthusiastic contributors include the EMD commodity, program, publications, and annual meeting committee chairs. We need volunteers to head up and/or assist with committee publications (including the journal), meeting programs, and planning. I am even now scouting for candidates to head the committee when my term expires.

Comments, suggestions, and offers to help are welcomed by phone, e-mail, or regular mail (2420 Ruby Ave., San Jose, CA 95148, Phone: 408-238-3580, Fax: 408-238-2446, e-mail: dtowse@delphi.com).

*Donald Towse
Economics Committee Chair*

POTENTIAL REMOTE SENSING USERS ASSOCIATION

More than 30 commercial providers, distributors, and users of remote sensing data worldwide met in Geneva, Switzerland in December and agreed to discuss the formation of an international private sector remote sensing users association. The 30 attendees were from Austria, Australia, Canada, France, Germany, Italy, Japan, Spain, Switzerland, Sweden, the United Kingdom, and the United States.

Several international reports recommended that remote sensing users and providers work more closely to identify breakthrough technologies, to coordinate data format requirements, as well as to educate and expand the market. EOSAT followed up on this recommendation by organizing a conference to bring together representatives from key components of the private sector remote sensing industry.

Established industry providers who made presentations included representatives from Eurimage, RadarSat International, the Remote Sensing Technology Center of Japan, and SPOT Image. The Indian Space Agency expressed support for the planned organization and outlined its activities and future plans for remote sensing platforms in a letter read to the attendees. Future providers, including WorldView Imaging Corp., Lockheed Missiles and Space Co., CTA Inc., and Orbital Sciences Corp., also briefed the users about their plans.

Among the concerns expressed by the users was the reliability of the follow-on mission plans of the future satellite data providers. The future providers responded that they are committed to providing data continuity. Additional concerns discussed were the continued need for quality data, global coverage, and low-cost products for the consumer.

"The group made significant progress toward the creation of an association," said Marcello Maranesi, Managing Director of Eurimage in Rome, Italy. "This group will be a valuable tool for commercial users to develop a clear presence in the industry and to forge a role in the decision-making process of government and commercial data providers."

"The users have specific needs and an understanding of the market that should be conveyed to the data providers," said Dr. Rupert Haydn, Managing Director of GAF in Munich, Germany. "This new forum will provide an important mechanism for the data providers to hear from the users."

The users appointed a committee of five to draft a proposal outlining a possible organizational structure and agreed to extend the membership to other users with similar interests. The group will convey their interests and concerns to providers of satellite data, both commercial and governments, and international coordinating entities, such as the Committee for Earth Observation Satellites (CEOS).

The users and providers met again in February in Melbourne, Australia. A future meeting will be held in North America.

EOSAT News Release

EMD MEMBERSHIP REPORT

There were 1,902 members in EMD as of December 31, 1993 (end of fiscal year). This is a 105 member decrease from December 31, 1992. Membership has further decreased to 1,862 by the end of May, 1994. This was a concern expressed previously when we were experiencing membership growth.

The May 1994 membership includes 1,154 active members (1,062 active, 56 emeritus, 7 life, and 29 honorary), 491 junior, 169 student, and 47 associate members.

The AAPG membership continues to decrease in 1994 and is decreasing at a rate of approximately 750 per year. This trend will begin to be reflected in EMD membership.

As of year-end 1993, nine "major" companies have 10 or more EMD members, two others have nine members, and after this participation falls off rapidly. Twenty-six major company employers have only 165 EMD members. The consultant/independent employers have 648 of our members. It is apparent that it will become more difficult to get the major portion of our membership to attend national AAPG meetings.

The economy of the industry and perceived employment opportunities of the university students has caused a marked decrease in the student membership between year-end 1992 and year-end 1993. There were 212 student members for 1992, and 183 at year-end 1993.

Education and government agencies have not shown the membership reductions industry has.

Membership must continue to be an EMD focal point.

*Frank D. Pruett
Secretary/Treasurer*

ROCKY MOUNTAIN SECTION REPORT

The EMD was well represented at the 1993 Section meeting held in Salt Lake City, Utah, September 12-15. The division sponsored a session with eight papers covering uranium, coal, coalbed methane, and geothermal energy. EMD also had a booth, several posters, and a luncheon. The luncheon speaker, Dr. Merrill K. Rudd, spoke on "The Future of Remote Sensing to Earth Science Applications." Dr. Rudd is a geography professor at the University of Utah and is Director of the Center for Remote Sensing and Cartography at the University of Utah Research Institute. Mike Wright did an outstanding job of organizing EMD activities at the section meeting.

*William L. Chenoweth
Rocky Mtn. Sec. Councillor*

BIOLOGICAL CONVERSION OF COAL TO METHANE

During the mining of underground coal, substantial quantities of coal are left in place (abandoned) to support the roof as workers leave and equipment is removed from the mine. The energy content of the coal abandoned each year is approximately five quadrillion BTUs, equivalent to one year of the United States' nuclear energy production. The U.S. Bureau of Mines (USBM) is exploring ways to extract energy from this unmined coal through the biological conversion of coal to methane gas. While the chemical conversion of coal to gas requires a facility and equipment to create extreme pressure and temperature conditions, the biological process being developed by the USBM would occur in situ, without the surface facility and equipment needed for chemical conversion.

The anaerobic-microbial respiration cycle produces methane gas, the principal component of natural gas. By introducing microorganisms and their nutrients into the strata of abandoned mines to degrade the coal, methane gas would be produced as the microbial community breaks the chemical bonds in the coal. Data from previous mining activities on the geology and elevations of the seam would be used to design and position the injection, extraction, and gas production wells. Injection wells would supply the microorganisms and their nutrients to optimize microbial growth. The methane gas, collecting at the high points in the mine, would be recovered by the production wells.

Earlier experiments found microbial cultures that degraded only low-rank lignite coal, but the USBM recently found microbes (isolated from anaerobic, coal-containing sites) that convert a portion of high-rank bituminous coal to methane. Laboratory tests show

that these cultures, incubated with coal and nutrients in anaerobic serum tubes, produce gas containing 25% methane. Although some of the methane comes from carbon in the nutrients, these unique cultures continue to produce methane

after all the carbon sources, other than coal, are removed. These microbes proceeded to produce 5% methane from 0.1 g of coal during tests, or about 250 ft³/ton of coal. The scale up of these tests is proceeding, and results show steadily increasing methane production. A patent application on this conversion process has been filed, and the USBM is seeking cooperators to assist in the research and in commercializing the technology.

Contact the USBM Office of Technology Transfer, 810 Seventh St. N.W., MS 6201, Washington, DC 20241, Phone 202-501-9323 for more information on this conversion process.

(from U.S. Bureau of Mines *Technology Transfer Update*)

GEOLOGICAL SURVEY OF WYOMING PREDICTS INCREASE IN URANIUM PRODUCTION

Annual uranium production from in situ recovery operations in Wyoming should increase by at least 600,000 lbs of yellowcake in 1994, according to Ray Harris, Head of the Wyoming Survey's Industrial Minerals and Uranium Section. In situ uranium production since 1988 has remained fairly constant at between 900,000 and 1,800,000 lbs of yellowcake.

Since the closure of Pathfinder Mine's Shirley basin open-pit uranium mine in early 1991, Wyoming's only commercial production has come from Power Resources' Highland in situ recovery operation north of Glenrock. This operation produces about 1,000,000 lbs/yr yellowcake.

In late December, 1993, Cogema Resources' Christiansen Ranch uranium recovery operation, located in Johnson County just west of Pumpkin Buttes, reached full-scale production. This deposit has produced uranium by in situ methods in the past, having been operated in turn by Wyoming Minerals, Malapai Resources, and Total Minerals.

GSW Press Release

ADVERTISING NOW ACCEPTED

Advertising in the form of business cards and standard advertisements for services and materials/equipment now is being accepted for "The Energy Minerals Geologist." Business cards will be published in one-column size and will cost \$10 per newsletter issue (\$35 for four issues). Advertisements must conform to the 3-column format of most of the newsletter, must be camera-ready copy, and can be full-page, half-page, one- or two-column (vertical), one-third page, one-fourth page, or one-sixth page in size. Call for prices for non-business-card advertisements. There are discounts for full-year (four-issue) subscriptions. Please contact Doug Peters (303-236-0777 x772) for more information on price and deadlines for submissions.

Deadline for our receipt of advertisements and cards for the next issue is September 9, 1994.

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NEW PHONE NUMBER FOR EDITOR!!

As of July 11, 1994, Doug Peters will have a new telephone number. The U.S. Bureau of Mines Denver Research Center offices are switching from the present direct dialing to a voice-mail system. Doug's new phone is 303-236-0777, extension 772. His fax number and e-mail address remain the same as before.

COMING IN THE NEXT ISSUE:

- Message from new EMD President Chip Groat
- Abstracts from 1994 AAPG meeting in Denver
- EMD Vice-Chair's Report on 1994 Annual Meeting
- Pictures of 1994 EMD Awardees and from the 1994 EMD/DEG Joint Annual Luncheon

DEADLINE FOR ADVERTISING:
SEPTEMBER 9, 1994

HOW TO SUBMIT MATERIAL FOR THE NEWSLETTER

We encourage you, the EMD member and/or reader of the EMD newsletter, to submit short notices and articles (in suitable form) for publication in the newsletter. These can include commodity/industry news notes and press releases, product announcements in areas of EMD topics, book reviews, employment changes, member news, geological software reviews, and any other items which would be of general interest to EMD members. We prefer to receive such articles in ASCII format on IBM-compatible diskettes (which will be returned), but letters or legible faxes are okay. Mailed and faxed material should be sent to Doug Peters at the U.S. Bureau of Mines, P.O. Box 25086, Bldg. 20, Denver, CO 80225, Fax: 303-236-0828. Doug and Carl also can receive messages and articles via INTERNET e-mail at mailboxes petersd@drc.usbm.gov or smith@gandalf.wvgs.wvnet.edu. Call Doug at 303-236-0777 (x772) or Carl at 304-594-2331 for more information on submitting material. General comments and suggestions can be addressed to us as well.

*Doug Peters
Carl Smith*

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