HGS DECEMBER CALENDAR

December 8-9, 1977 (Continuing Education)
Exxon Auditorium
Dr. Earle F. McBride, University of Texas at Austin
“Diagenesis of Sandstones and Shales: Application to Exploration for Hydrocarbons and Uranium”

December 14, 1977 (Noon Meeting)
Tanglewood Room, Holliwell Inn—Medical Center, 6701 South Main
Dr. Colin Barker, University of Tulsa
“Plates Tectonics, Organic-Matter Type and Basin Evaluation for Petroleum Potential”
Luncheon and Meeting—12:00 Noon
Reservations (telephone only, 223-8300) must be made by noon Monday, December 12, 1977.
**PRESIDENT'S COMMENTS**

To practically everyone I have ever had the privilege of knowing, the Christmas season is a time of sharing. Therefore, this is an appropriate opportunity to discuss the Houston Geological Society Memorial Scholarship Fund. Many of you are familiar with the origin and purpose of this fund, but the Society has added so many new members the past 2 years that I do not believe it is redundant to discuss the fund with you at this time.

The Memorial Scholarship Fund has a dual source of origin. For a number of years, the Society was building a Memorial Fund account in which small sums were periodically deposited in memory of deceased members. The purpose was eventually to have a sum of money adequate to award a scholarship to a geology student. Late in 1974, Warren L. Calvert approached the Executive Board with a proposal to donate $8000 in long-term bonds to be held in trust by the Houston Geological Society as part of a special economic-geology scholarship fund. The Executive Board unanimously approved this proposal and a Scholarship Board of five HGS members was established. In November 1976, the Executive Board approved closing out the Memorial Fund account and the transfer of the $2019.81 balance to this newly established scholarship fund. The latest Scholarship Board treasurer's report lists the fund’s current assets as $17,459.91. Since the fund is presently earning between $1400 and $1500 per year, the Scholarship Board believes they are now in a position to consider awarding the first scholarship.

The fund is managed by a Scholarship Board consisting of five volunteer members who serve without pay. The current board is composed of Robert J. Schrock, Chairman; Sabin W. Marshall, Treasurer; Carl E. Norman, Secretary; Hal H. Bybee; and Robert L. Zinn. Warren L. Calvert serves as an advisor to the board.

The stated purpose of the fund is to assist worthy and needy geological students to pursue graduate studies in some branch of economic geology leading to a master’s or doctor’s degree at any accredited university. Scholarships will be awarded on the basis of scholastic ability, need, high moral and ethical standards, and conduct.

Members of the Houston Geological Society are encouraged to consider making a contribution to the Memorial Scholarship Fund. The Internal Revenue Service has ruled that all donations will be tax deductible as charitable contributions. There are three classes of benefactors: Patrons, Donors, and Contributors. Patrons are those who donate $500 or more; Donors, $100 or more; and Contributors, less than $100. A Contributor may move up to a higher class when the sum of his donations reaches a higher class level. Names and classes of benefactors are published in the HGS Bulletin; amount of donation is not shown.

My wife joins me in extending best wishes to you and your loved ones for the Holiday Season, and may health, happiness, and prosperity be yours in 1978.

DEAN GRAFTON

**MEETING LOCATION**

Holiday Inn—Medical Center  
6701 South Main, Tanglewood Room  
(Parking Free in Motel Garage.)

Luncheon .......................... $6.50

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**SOCIETY CALENDAR FOR JANUARY**

**January 9, 1978**  
Summit Club  
Dr. William E. Galloway, Bureau of Economic Geology, Austin.  
"Relationships Between Depositional System, Groundwater Flow History and Origin, Migration and Concentration of Uranium-Catahoula Formation of Texas Coastal Plain."

**January 12-13, 1978**  
Exxon Auditorium  
Dr. W. John Lee, Texas A & M.  
"Reservoir Engineering for Petroleum Geologists."

**January 25, 1978**  
Holiday Inn—Med. Ctr.  
Dr. Clyde H. Moore Jr., L.S.U.  
"Diagenetic Controls over Porosity Distribution in Ancient Carbonate-Rock Sequences."

**NOON MEETING—DECEMBER 14, 1977**

**COLIN BARKER—BIOGRAPHICAL SKETCH**

Dr. Barker was born in Plymouth, England. He received a Bachelor's degree in Chemistry and a doctorate in Geology from Oxford University. After 2 years as a postdoctoral Research Fellow at the University of Texas at Austin, he joined Exxon Production Research Company in Houston in 1967. He became a faculty member at The University of Tulsa 2 years later and is now Professor of Geochemistry and Chairman of the Division of Physical Sciences (which includes Physics, Chemistry, and Earth Sciences). Dr. Barker is active as a consultant and is a lecturer for the AAPG Continuing Education program. He is a member of the Geochemical Society, AAPG, North American Thermal Analysis Society, and the Tulsa Geological Society. He is currently Chairman-elect of the Organic Geochemistry Division of the Geochemical Society.

**PLATE TECTONICS, ORGANIC-MATTER TYPE, AND BASIN EVALUATION FOR PETROLEUM POTENTIAL**

The concepts of plate tectonics have been used to classify sedimentary basins in terms of physical characteristics, such as location on the plate and geothermal gradient. A complete classification must include the amount, type, and distribution of organic matter because this is the material that generates petroleum. Organic matter can be divided into that which grows on the land surface (terrestrial) and that which grows in water (aquatic). This is an economically important distinction because aquatic materials produce normal crudes whereas terrestrially derived materials produce gas and waxy oil. Transport of terrestrial organic matter to areas of deposition...
depends on surface relief because this controls drainage patterns. The association of transported terrestrial organic matter with clastic sediments makes deltas the most gas-prone depositional environment. Organic materials are not distributed uniformly in deltas because terrestrial organic matter has its highest concentration nearshore and aquatic material is produced in large amounts offshore. This separation and distribution lead to gas fields near paleoshorelines and oil farther out. As the delta progrades, terrestrial organic matter is deposited over the previously deposited aquatic organic matter, producing a vertical sequence from gas to oil in the delta. Sediments on subducting plates should show the same vertical sequence of terrestrial over aquatic material because the slow transport of sediments toward the source of terrestrial organic matter causes its concentration to increase as the subduction zone is approached. The opposite trend (i.e., aquatic over terrestrial) is found on pull-apart margins where the oldest sediments were formed in a continental rift rich in terrestrial organic matter and were overlain by sediments containing increasing amounts of aquatic organic matter. The distribution of organic-matter types exercises primary control over the distribution of oil and gas.

Reciprocity Agreement
APGS-AAPG-AEG-SEG
Ends
January 12, 1978
See Page 4
September Bulletin

RESERVATIONS—223-9309

Please make reservations for the Wednesday noon meeting by the preceding Monday noon.

WHERE LIES AMERICA'S ENERGY FUTURE?
by John D. Moody, Past President
American Association of Petroleum Geologists

For the first time, this country has a good opportunity to develop a coherent, sensible, long-range energy policy. Whether or not we're doing so belatedly may not be entirely beside the point, but it's more important to understand the dynamics at work creating the need for such a national policy.

Basically, the need arises out of the interplay of three factors—utilization of natural resources, growth of population, and environmental degradation—which together determine a given quality of life. The more natural resources, or energy, we can make use of, the better our quality of life can become. If population increases but the other factors remain constant, life quality declines. Population increases also produce corresponding increases in environmental degradation. These kinds of tradeoffs are inevitable and have become very evident.

We are now reaching the physical limits of resource availability—of those finite sources, fossil fuels and uranium, on which we are so dependent—and this fact in turn exacerbates the problems created by the other factors in the interconnecting equation. On a worldwide scale, exponential population growth poses the somberest of considerations for maintaining, let alone improving, life quality.

In the United States, an abundance of cheap energy, which we have come to take for granted, has created our high-technology society and has enabled it to sustain decades of often great population growth while also substantially increasing our standard of living. But now our energy dilemma is real, will not go away, and will not be remedied by the quick technological fix we have frequently used in the past with success.

Our energy dilemma is particularly due to the fact that we have had to rely on low-entropy—or most available—sources of energy which are finite and nonrenewable. Seventy-five percent of that energy is derived from oil and natural gas, and it's difficult to foresee any great change in this figure for at least the next decade.

So the dilemma translates into an energy availability shortage which will be with us until we can develop and make economically feasible the high-entropy, unlimited energy sources—geothermal hot rocks, heavy hydrogen, solar energy, and atmospheric electricity. Unfortunately, this is going to be a long process taking 25 years or more. We're going to have to cope by exploiting that portion of our low-entropy energy endowment that is left to us—perhaps 35% of the world’s discovered and undiscovered total, but less than 1% in oil, natural gas, and uranium.

We may have about 125-150 billion bbl of producible crude and 400-600 trillion cu ft of gas left to find. About half of this total is believed to be beneath Atlantic, Gulf of Mexico, Gulf of California, and Alaskan waters. The total may seem high, but it won't eliminate the need for imports; nor will it carry us through too many more winters like the last one.

We desperately need this oil and gas, but we've erected many regulatory and legislative barriers to frustrate our obtaining it. In addition, an arcane pricing and tax structure makes it economically impractical to do exploration or exploitative drilling in areas where there are known reserves. Meanwhile, the cost of exploration alone has risen dramatically and needed capital is lacking. For example, it now takes about 50 field wildcats to produce one find which will yield a million barrels of oil or its equivalent in natural gas.

Clearly, arbitrary disincentives, often accomplished by governmental fiat in the face of geologic reality, to the capital-intensive job of exploration, do not lead to the results we all want. As one government official said recently, "We are going up the down escalator on energy matters in this country."

In this regard, while President Carter's energy plan contains many features which need to be implemented quickly, it conspicuously lacks drilling incentives. For instance, the proposed defining of new-oil prices to cover only those accumulations found 2.5 mi from producing wells ignores the fact that there is much wildcatting to be done within this contrived limit. Many wildcat prospects in onshore Louisiana, offshore Gulf of Mexico, and in Texas fall in this category. Also, the old-oil price is being forced on some producers merely because new finds have occurred under a base lease on which there was prior production.

These are not especially good ways to get us moving in the right direction again. No energy policy can be realistic without all-out encouragement given to exploration and drilling. We should reward risk rather than confront the risk-takers with red tape and sour financial fruit. We simply do not have an alternative.
GEOTHERMAL TESTS

ERDA's Division of Geothermal Energy has awarded Gruy Federal, Inc., of Houston a $3 million contract to drill or test up to 6 wells in Gulf Coast geopressed-geothermal formations next year. Reservoir and production data necessary to assess the energy potential of dissolved gas and heat within Gulf Coast aquifers will be obtained. The field program awarded to Gruy follows 3 years of ERDA and industry-funded research by the University of Texas, Texas A&M, and LSU.

CONGRESSIONAL ISSUES

The Houston Chronicle reports the Texas Congressional delegation voting as follows on selected issues.

SENATE
1. Natural gas pricing—Authorized 62 to 31 the new Federal Energy Regulatory Commission to be the sole designator of the crude oil equivalent price on which new offshore gas prices are to be based.
2. Natural gas pricing—Adopted 74 to 18 an amendment to encourage electric power plants in the Southwest to convert from natural gas to fuel oil. Utilities switching to fuel oil would be permitted to resell gas contracted to them for about $3 per MCF.
3. Retirement age—Refused 48 to 45 to extend the mandatory retirement age of high-paid business executives and tenured university professors to age 70. This gives universities and business the option of making the mandatory retirement age 65 for those persons.
4. Retirement age—Passed 87 to 6 a bill allowing most Americans who now must retire at age 65 to continue working until they are 70.
5. Air bags—Moved 65 to 31 to table, thereby defeating, a resolution to disapprove the Transportation Department ruling that all new cars be equipped with air bags or other passive safety devices by the 1984 model year.
6. Natural gas pricing—Passed 50 to 46 the gas-pricing proposal of Sens. Lloyd Bentsen, D-Texas, and James Pearson, R-Kansas, to remove federal price controls for new onshore gas sold in the interstate market after 2 years, and from new offshore gas after 5 years. New gas is defined as that sold or delivered on the interstate market since January 1, 1977.
7. Utility rates—Passed 86 to 7 legislation encouraging fuel conservation by electric and gas utilities. The Senate refused to authorize the DOE to intervene before state utility commissions as Carter proposed.
8. Minimum wage—Approved 76 to 14 an annual incremental increase in the national minimum wage from its present rate of $2.30 per hour to $2.65, $2.90, $3.15, and $3.40 for the years 1978-81, respectively.
9. National Energy Plan—Voted 51 to 27 to encourage conversion to coal by imposing an excise tax on new industrial and utility boilers burning oil or gas, and on existing boilers capable of conversion to coal.

Tower, Rep. N Y N Y N Y Y Y N
Bentsen, Dem. Y Y N Y Y Y Y N

HOUSE
1. Neutron bomb—Rejected 297 to 109 an attempt to delete an authorization of funds for research and development, production, and deployment of enhanced radiation, or so-called "clean" weapons.

2. Crime victims—Approved 192 to 173 compensation for victims of crime through federal grants. The federal government would reimburse states for 25% of the first $25,000 they pay to victims.
3. Labor reform—Passed 257 to 163 legislation making it easier for unions to recruit members and strengthening penalties against employers illegally blocking unionization.
4. Labor reform—Defeated 229 to 185 an amendment to extend the time period in which the NLRB must order an election on union representation.
5. Labor reform—Rejected 250 to 162 an attempt to delete an amendment authorizing the NLRB to award compensation to workers during the period in which an employer unlawfully delays the start of collective bargaining.
6. Congressional reform—Defeated 252 to 160 a parliamentary move to bring up for consideration a proposal by its special "reform" commission to reorganize internal House operations and legislative jurisdictions.
7. FTC—Approved 279 to 131 legislation strengthening the enforcement authority of the Federal Trade Commission by extending its subpoena powers.
8. FTC—Passed 281 to 125, with one member voting "present," an amendment by Rep. Krueger, D-New Braunfels, to remove from the FTC bill a section allowing consumers to bring class-action suits against companies in violation of FTC orders.
9. Waterways users' tax—Voted 331 to 70 legislation requiring commercial users of inland and coastal waterways to pay a fuel tax to help defray the costs of waterways maintenance.
10. Minimum wage—Passed 236 to 187 a bill increasing the minimum wage by $1.05 an hour over the next 3 years.
11. Social Security—Approved 275 to 146 a Social Security financing reform package to increase payroll taxes for all employees and employers and to provide annual increases in the wage base over the next decade.

ARCHER, REP.  1 2 3 4S 6 7 8 9 10 11 12
ECKHARDT, DEM.  Y Y Y N N Y N Y Y Y N
GAMMAGE, DEM.  N A N N N Y Y Y Y N
JORDAN, DEM.  N Y Y N N Y Y Y N
KRUEGER, DEM.  N A Y N N Y Y Y Y Y

RAPTORS FLYING HIGH AND WIDE!!

Secretary of the Interior Cecil D. Andrus has announced that preliminary research findings indicate that raptors from the Snake River area near Boise, Idaho, are using a much broader area than set aside for them in 1971 with the establishment of the 31,000-acre Snake River Birds of Prey Natural Area and an additional 290,000 acres administratively designated as a Study Area in 1974. So—the Study Area is being expanded by an additional 230,000 acres. This means that any actions in the Study Area which might jeopardize the raptor prey habitat are suspended until a permanent natural-area boundary is established and a plan for management of the land is implemented. Recommendations and proposed legislation to accomplish this are to be ready by June 1979. (Question: Should you wear a hat when in Idaho?)
GUEST COLUMN
OUR PROFESSIONAL IMAGE
by John J. Amoruso, AAPG Secretary

It is no particular revelation to anyone that geologists are currently in very high demand within the energy industry. Employment opportunities are good in all facets of petroleum exploration for geologists of virtually all experience levels in almost all types of situations ranging from major oil companies to small independents. A casual glance at the help-wanted sections of the major trade journals now reveals a wide variety of job openings which cover several pages. The status of geologists, at least in Houston, has even risen to the point where a local realty company on a radio commercial advertising its posh townhouses is proudly announcing that geologists, along with members of several other high-status professions, live there; proof that their townhouses are desirable.

Geologists who have been in the profession more than a few years should have no trouble remembering when times were not so good. The status of geologists was not worth all that much and their services were not in much demand. Reduced exploration budgets caused layoffs of geologists and the demise of some smaller companies. In a number of cases, economic pressures forced geologists out of the profession into other fields.

Fortunately, we have truly “come a long way” in the last few years. The general awareness that this country must discover and develop as many new oil and gas reserves as possible, if our present standard of living is to be maintained, and a reasonable expectation of satisfactory economic rewards have given us a strong impetus to petroleum exploration. This exploration impetus has benefited geologists because we are the sine qua non of any exploration program; we have been elevated from an unessential limbo to a critical necessity.

We now have an excellent opportunity of consolidating our professional gains by strengthening our professional societies into units which are not only active within geological circles, but are also active in the public and political sphere where our expertise can be utilized with advantage. The public visibility of competent, professional geologists, members of strong, vigorous local and national geological organizations, can have no other effect but to gain us the recognition and respect that we have always deserved but frequently lacked in the past. Perhaps then, as an example, our state and national legislators will think in terms of geologists when they are writing bills relating to earth science matters instead of defining, in the text of the bill, registered engineers, surveyors, and even water-well drillers as the experts in geological matters.

Our associations and societies have done a good job of informing politicians of our rightful place in matters concerning the earth, and the term “geologist” has been added to many a piece of legislation where it most surely belongs. However, until politicians and the public automatically think “geologist” when they are thinking about earth science, we still have a long way to go in successfully establishing our identity. We must become as well recognized in the public eye as are the medical doctors, engineers, and lawyers, to name a few, if we are to successfully confirm our professional image.

accomplished by actively participating in the activities and projects of our local and national geological organizations, The Houston Geological Society, The American Association of Petroleum Geologists, The Association of Professional Geological Scientists, and The Society of Independent Professional Earth Scientists, all have a myriad of programs which could always use more help. The wide variety of activities can accommodate any individual preference, and all of the activities are geared to strengthen the profession both within and without. If we expect to be treated as professionals we have to act like professionals, and active participation in professional activities is the key to projecting that image to the public.

If you are active in your profession’s activities you already know how much pleasure and satisfaction can be gained. If you are not active as yet, why not become a participant? You will enjoy the fellowship and help to confirm to the public that geologists are truly professionals, second to none.

RECENT DEATH

Henry A. Campo, 65, died October 11, 1977, in Oklahoma City. Henry was a retiree of Atlantic Richfield and at his death manager of the Oklahoma City Geological Society Log Library in Oklahoma City.

CONTINUING EDUCATION

Dr. Earle F. McBride will give the second Continuing Education Program on Dec. 8-9 in the Exxon Auditorium at the usual times: 1:30 P.M. Thursday afternoon and 8:30 A.M. Friday morning. The course is entitled “Diagenesis of Sandstones: Factors Affecting Porosity and Permeability.” A preregistration slip was enclosed with the November Bulletin; the cost is $20 for early registration, $25 at the door and $10 for students. Send your preregistration slips and checks to the H.G.S., Attn: Vicki King, 806 Main, Suite B-1, Houston, TX. 77002. These fees will include a 165-page syllabus printed by the U.T. Department of Geological Sciences.

Dr. McBride received a BA from Augustana College, Illinois in 1954, an MA from the University of Missouri in 1956, and a Ph.D. from Johns Hopkins in 1960; all in the field of geology. He worked for Shell Oil Company during school summers, and joined the faculty at the University of Texas in 1959 and is currently a full professor. His publications include studies on turbidites, bedded cherts and sandstone petrology.

The third Continuing Education Program will be held on January 12 and 13 when Dr. W. John Lee will give his two-session lecture entitled “Reservoir Engineering for Geologists.” A preregistration card is enclosed with this Bulletin; fees, as usual, are $20 for early registration, $25 at the door, and $10 for students. The lecture is basically a survey of methods of estimating oil and gas reserves, with coverage of both primary and secondary drive mechanisms. The lecture is problem-oriented, with about half the available time to be spent in working short, simple problems designed to illustrate major principles discussed.
HGS MEMORIAL SCHOLARSHIP FUND

Mrs. Dean Grafton has a novel solution to that perennial Christmas-time problem of what to give the person who has everything. In this case the person is Dean Grafton, the Society President, and Georgia's solution is a contribution in the DONOR category to the HGS Memorial Scholarship Fund in Dean's name. The Scholarship Board is grateful to Georgia for this splendid idea of Christmas giving, and it is also pleased to be part of the surprise that our President is sure to experience when reading this column. The Board also gratefully acknowledges the following corporate contributions in the categories listed.

_Benefactors_
- General Crude Oil Company, Houston
- Ashland Oil Co., Houston
- Highland Resources, Inc., Houston
- The Moran Corporation, Houston

_Donors_
- North Central Oil Company, Houston
- Prairie Producing Company, Houston
- Texas Gas Transmission Company, Houston

_Contributors_
- Phillips Petroleum Company, Houston
- United Texas Transmission Company, Houston

MINING-LAW REFORM PROPOSED

Interior Secretary Cecil D. Andrus proposes, in a bill sent to Congress, to replace the present Mining Law of 1872 with a law establishing leasing and royalty systems to publicly owned hardrock minerals. These minerals are principally copper, lead, uranium, gold, silver, nickel, iron, and zinc. Andrus charges that the Mining Law of 1872 requires the Government to surrender valuable public land entirely when the existence of a valuable mineral deposit can be proved. The proposed bill requires:

1. A license holder would have a preferred right to a lease, if the Secretary decided to issue one, as long as the holder met requirements provided by the bill. No person would be allowed to control exploration licenses for more than 5,120 acres in any one state.
2. A license would run for 5 years and could be extended for another 5. It could not apply to more than 1,280 acres, and would cost $5 an acre a year.
3. Under the bill, the Secretary could issue a lease to a licensee for the development and production of one or more hardrock minerals in a mining area. A lease application would have to include enough information to enable the Secretary to estimate the probable extent of the mineral deposit, the mining, milling, and transportation methods, and the expected environmental and social impacts of development. No person would control leases on more than 51,200 acres in the United States, and no lease could be issued without the public having an opportunity for a hearing.
4. No licenses or leases would be issued unless the leased lands have been included in a federal land-use plan, except under certain conditions.
5. A lease would require diligent development and continued operations by the operator. A lease would be for 20 years and as long thereafter as the lessee conducted operations on the lease itself or on a logical mining unit approved by the Secretary. Annual rental for a lease would be not less than $25 an acre.
6. Royalty could not be less than 2 percent of the gross value of the output of a mine or a comparable sum under other systems of payment.
7. A licensee or lessee would have to submit exploration or mining plans describing possible surface disturbance. The Secretary would issue regulations to assure that prospecting, exploration, development, and production are conducted "in a manner that minimizes to the maximum extent feasible environmental damage."
8. These regulations would have to assure compliance with air and water quality laws, and minimize or prevent erosion, flooding, release of toxic substances, rock slides, fires, damage to fish and wildlife habitats, and not threaten public health and safety.
9. The Secretary would require that a reclamation plan be approved and enforced. The Secretary could adopt State environmental regulations and standards which are as strict as, or stricter than, federal ones, and could sign agreements with states to enforce environmental regulations and standards.
10. Current holders of mining claims could file applications for an exploration license, or in the case of a millsite, for a surface lease, or a patent within 2 years after the proposed act became effective.
11. Any mining claim for which an application is not timely filed would become void.

UNIVERSITY OF TULSA
17th ANNUAL SHORT COURSE, ADVANCED PETROLEUM GEOLOGY

The Division of Continuing Education of the University of Tulsa announces the dates for this excellent offering are January 16-27, 1978. Emphasis this January will be on reservoir development. Exploration geologists and geophysicists will find this course useful to update their knowledge on current exploration and development trends. Enrollment is limited to 50. Brochures and registration forms are available from Glenn S. Visher, Professor of Earth Sciences, The University of Tulsa North Campus, 1133 North Lewis Avenue, Tulsa, Oklahoma 74110. Phone 918/939-6351, Ext. 615.

WOMEN GEOSCIENTISTS COMMITTEE

The Women Geoscientists Committee is a full committee under the American Geological Institute. Its purpose is to increase the participation and recognition of women in the geosciences. It is an active committee that publishes a newsletter twice a year, maintains a Roster of Women Geoscientists, coordinates a job-referrals system, and holds symposia and open houses at GSA and other meetings. For the newsletter, send your name and address to: Dr. Jan Tullis, Dept. of Geological Sciences, Brown University, Providence, R.I. 02912.

To be included on the Roster, ask an editor of the Bulletin for a form.

USGS BUDGET UP—LOTS!

The fiscal-year 1978 appropriations for the USGS total $571 million, up from $320.4 million for FY 1977. The major increase includes a total of $209.4 million to carry out responsibilities for the exploration and evaluation of the National Petroleum Reserve in Alaska. The jurisdiction of this was transferred from the Department of the Navy to the Department of the Interior effective June 1, 1977, and responsibilities for the administration of the petroleum exploration program were delegated to the USGS.
COSTLY IMPACT ON TEXAS
by Norman Baxter
Chief, Chronicle Washington Bureau

Should President Carter’s plan for meeting the nation’s energy needs become a reality, the United States will embark on a second coal age.

The costs are in the billions but, according to a congressional agency, the General Accounting Office (GAO), of more concern is the degradation of the environment.

The impact on Texas would be more severe than most areas of the country, GAO estimates, because the state’s development into a major energy user came well after the first coal age which peaked in the early 1900s.

Coal burning in the state for generating electricity and steam is a rarity. Texas utilities and industry have primarily burned the so-called clean fuel, natural gas. Texas, GAO reports, consumes more than four times as much natural gas for electricity as any other state.

Even so, the state has severe air-pollution problems from other sources. Utilities and industries, if forced to burn coal as Carter proposes, will spew vast amounts of pollutants into the air.

“There is too much muck in the air, now,” Sen. Lloyd Bentsen, D-Texas, says. “There must be exception to the coal policy.”

The muck generated already by electric utilities in Texas is not small. Emissions in 1972 of particulate matter were about 1.4 million tons, sulfur dioxides at 1.2 million tons, and nitrogen oxides at 2.1 million tons.

Those emission figures come from Hal Cooper, assistant professor of civil engineering at the University of Texas at Austin. He estimates that the emissions of particulates and sulfur dioxide could go up by 200,000 tons each by 1985 under Carter’s plan while nitrogen oxides would jump by more than 500,000 tons.

Those particulates which would escape into the air unless better systems are developed than currently exist, the GAO states, “…are alleged to pose a special health hazard because of their ability to penetrate the respiratory system.”

Sulfur dioxide pollution has been blamed also for increasing respiratory ailments such as bronchitis, asthma, emphysema, and lung cancer.

Nitrogen oxides are linked by the GAO to “acid rains,” which harm plant and animal life. Cooper says the Carter energy plan’s emphasis on burning coal, and lignite in Texas, would be an “increased potential” for acid rains along the Eastern Seaboard and to a lesser extent in Northeast Texas.

The GAO says it is also concerned about pollutants from coal which are not controlled by current federal regulations and are considered dangerous to human health. In this category are trace elements of minerals emitted when coal is burned and carbon dioxide, which GAO and others believe could cause global changes in the weather by creating a “greenhouse” effect.

GAO has urged Congress not to agree with Carter’s plan to double coal use by 1985 without a research effort that emphasizes finding solutions to the environmental problems caused by the burning of coal.

The monetary costs in Texas of the new age of coal, if it comes into being, are staggering.

Cooper estimates that utilities and industries in the state would have to spend from $50 billion to $70 billion to convert from natural gas and fuel oil to coal. He puts the cost of operating pollution controls on the new coal-fired plants at $700,000 to $1.3 billion in 1985.

In addition, during the period that the conversion to coal was in process, utilities and industries would have to pay an oil and gas use tax under the Carter proposal.

The purpose of that tax is to speed up the switch to coal. GAO estimates that Texas, because most of its plants would no longer use natural gas, would pay 37 percent of the total national tax in 1980. However, some of the tax would be rebated to industries in the state which were moving toward coal use.

Bentsen says the disproportionate amount of the tax that Texas would pay would push up electric rates the equivalent of $288 per year for each family by 1985.

Contending that Texas electric rates are too high now, Bentsen says he will try to kill the tax in the Senate Finance Committee. However, the House has already adopted the tax and, even if the Senate rejects it, the issue will have to be resolved in a House-Senate conference committee.

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COASTAL AREAS INDEX LISTS AVAILABLE WATER DATA

Information on water data collected at more than 14,000 sites in the coastal areas of the United States is listed in a new catalog index released by the U.S. Geological Survey, Department of the Interior.

Based on information supplied by over 100 federal, state, and local agencies, the index was produced by the USGS Office of Water Data Coordination (OWDC).

The index was prompted by concern regarding the effects of future development on the coastal zone. Coastal planners are presently working to prevent damage to coastal ecosystems by human activities, and to correct the damage already done. Extensive information about these complex ecosystems is required for such planning. The fact that the index provides information regarding the kinds of hydrologic data available to planners will help avoid duplication, and hopefully will lead to better use of coastal resources.

The index contains information on some 6,700 streamflow and stage stations and over 8,000 water-quality stations located in the coastal counties. Information provided for each type of measurement includes the identification and location of the station, the period of record, the major types of data collected, the frequency of data collection, the form in which the data are stored, and the agency collecting the data.

The report consists of four volumes: the Atlantic Coast (including Puerto Rico), the Gulf Coast, the Pacific Coast (including Alaska and Hawaii), and the Great Lakes. Each volume is divided into three parts: Part A—Streamflow and Stage, Part B—Quality of Surface Water, and Part C—Quality of Ground Water.

A limited number of the volumes are available free from the office of Water Data Coordination, U.S. Geological Survey, 417 National Center, Reston, Va. 22092.

LIGHTS OUT (?)

The National Electric Reliability Council (NERC) finds that the adequacy of electric power supply for the future is in jeopardy, and, once a deficiency of generating capacity exists, the time to recover will be measured in years. The Council reports that the utility industry is presently re-
strained from providing an adequate future supply of electric energy. This will result in (1) an era of an energy-limited economy for the United States, (2) disruption of operations in the industrial sector, (3) economic hardship and reduced operating efficiency to commercial establishments and the business community, and (4) adverse changes in the lifestyle of the American people with threats to their health and welfare.

NERC, in surveying the full requirements for the production of electricity in the U.S. for the next 10 years, shows that:

- **Coal-fired generation** will continue to provide an average of 47 percent of electric power supply. This will nearly double coal requirements from 481 million tons in 1977 to 879 million tons in 1986.

- **Oil-fired generation** will hold its proportionate role at about 17 percent from 1977 through 1982 and then decrease to less than 15 percent by 1986. In absolute quantities, the consumption of oil will rise from 631 million bbl to 878 million bbl. Most of this increase will occur by 1982.

- **Gas-fired generation** will decline by 58 percent from 2.6 billion Mcf to 1.1 billion Mcf. Its proportion, however, will decrease from 12 to 3 percent.

- **Hydro generation** will supply a decreasing proportion of electric power, dropping from 11 to 7 percent by 1986.

The NERC says that these fuel requirements, to a large extent, are already determined by power plant construction decisions made in the past, with 80 percent of all new base-load generating capacity to be added by 1986 now under construction.

The NERC notes that the constraints which threaten the power industry's ability to secure adequate quantities of fuel are (1) the complete inability to meet the coal needs of the nation without rapid and extensive action to expand the Western coal fields, (2) the adverse effects on coal production by the Federal Surface Mining legislation and more restrictive air quality standards, (3) a bottleneck in railway and river channel transportation of coal, and (4) the Administration's ambivalence toward nuclear power and regulations affecting the use of oil and gas as boiler fuels in existing plants, with gas phased out completely by 1990.

HINGE-BELT BIBLIOGRAPHY

G. G. Loucks, Distinguished Lecturer who spoke at the HGS October luncheon, has provided a "Basic Bibliography" on the geology of the Paleozoic-Mesozoic hinge belt of the western United States.


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THANK YOU, JUDGES!!

Thanks to the following H.G.S. members who served as judges at the G.C.A.G.S. Austin Convention: R. P. Akkerman, Ashland Exploration; Andy Anderson, Houston Oil & Minerals; R. S. Barnett, J. M. Huber; LeRon Bielak, Amoco Production; Paul Carter, McCord Exploration; W. W. Cooper, Gulf Research; Doris Curtis, Shell Oil; Byron F. Dyer, Sierra Production; Rod Eichler, Tenneco Oil; Dwight Flowers, Tenneco Oil; William A. Fowler, Jr., Phillips Petroleum; Harry Kuder, Texas Gas Transmission; Sabin Marshall, Texas Gas Transmission; Evelyn W. Moody, Independent; James A. Ragsdale, Watson Oil.

PROFESSIONAL NOTES

The New Orleans Geological Society informs us that their new officers are:

**President**

Rudolf B. Siegert, Westover Oil Co.

**First V.P.**

James W. Yeldell, McMorran Exploration Co.

**Second V.P.**


**Treasurer**

Robert S. Kline, Chevron, USA

**Secretary**

Terry M. Kramer, Davis Oil Co.

**Don Lane** has opened offices at 214 Southwest Tower, Houston 77002 (759-0040).

**Chris P. Cunningham** has joined GeoChem Laboratories, Inc. (467-7011).

**Jim Ragsdale** has joined Watson Oil (965-0881).

**David T. Threinen** has been elected to the Board of Directors of Tricentrol United States, Inc., and has also been appointed to the office of Vice-President, Exploration (United States) (403/264-3333).

**Stewart D. Saye** has joined Lear Petroleum Corp. as Area Geologist for the Texas and Louisiana Coastal Area (214/363-5085).

**J. Richard Hunt & Associates, Inc.** have established offices in Lakewood, Colorado to serve the Rocky Mountain oil and gas industry (303/963-2961 and 303/988-4223).

**David Hinerman**, consulting geologist, reports an address change to 5916 Valley Forge, Houston 77057 (782-0082). General Crude announces the promotion of **Charles A. Brinkley** to District Exploration Manager for their West Gulf District and the appointment of **Dr. Claude C. Rust** to Senior Regional-Strategic Exploration, Eastern United States.
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