

OIL & GAS CONSERVATION COMMISSION
Meeting: June 21, 1973
Mr. John Bannister, Exec. Sec.



OFFICE OF

Oil and Gas Conservation Commission

STATE OF ARIZONA

4515 NORTH 7TH AVE.

PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

Ken FOSTER
NEED LAND STUDIES

AK Doss - Land Dept

Jack

Ed

B:11

JB

Ben

Billy

Bledsoe

10:00 a.m.

A G E N D A

Meeting

June 15, 1973

4515 N. 7th Avenue, Phoenix, Arizona

Call to order

1. ✓ Approval of minutes of meeting of April 20, 1973
2. ✓ Report of Executive Secretary
3. ✓ Report of Enforcement Section
4. ✓ Report of Geology Section
5. ✓ Old Business
6. New Business
7. Adjourn

IF YOU ARE UNABLE TO ATTEND THIS MEETING, PLEASE NOTIFY THIS OFFICE AS SOON AS POSSIBLE.

1. NAVAJO SPRINGS - 90 day

2. MICHIGAN TRIP AUG 21-23 → OK

FLAGSTAFF → 3. BUDGET FOR 74-75 -

4. MY RISE ^(1/2) - Euc. Session

Budget for S. L. of A. 7-6-73 \$1,000

Holiday



OFFICE OF

Oil and Gas Conservation Commission

STATE OF ARIZONA

4515 NORTH 7TH AVE.

PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

June 14, 1973

Memo: Commissioners
From: John Bannister

I attended the midyear meeting of the Interstate Oil Compact Commission in Tulsa June 10 to 13th. Inasmuch as there was a conflict between the IOCC and a governors' meeting, only Governor John Love of Colorado, Governor Bruce King of New Mexico and Governor David Hall of Oklahoma were in attendance, however most of the remaining producing states were represented.

Several good papers were presented and, as usual in a meeting like this one, I was not able to hear all the papers due to conflicting times. Of particular interest, however, was a joint session wherein R. L. Kincheloe of the Lone Star Gas Company discussed a well drilled by his company to 30,050 feet in Anadarko Basin.

Another paper of interest to Arizona was given on the Burnham Coal Gasification Complex. This was given by J. P. Musick, a representative of El Paso Natural Gas Company, and concerned the plant which this company is hoping to build in New Mexico for the gasification of coal. A copy of said paper is attached.

As an outgrowth of the energy shortage, it was suggested that a task force be appointed by the Chairman of the Compact to re-evaluate the Compact and its charter and bylaws. The Compact was created during a period of abundant, if not over-supply, and with the situation drastically changed at this time, it was thought, particularly by the states of Louisiana and New Mexico, that the Compact should re-evaluate its position as represented in the charter and bylaws. At this time no committee has been appointed, but will be in the near future.

You will recall the recent publicity concerning a "blow out" in the state of Michigan. During this disturbance, yards, etc., in a small Michigan town erupted. An oil company was drilling a gas well some four to six miles from these disturbances and, although it would be impossible to prove that drilling the well had anything to do with the disturbances in town, the well company assumed financial responsibility but, of course, did not admit any liability. Michigan regulatory bodies received some

Memo: Commissioners
6-14-73
Page 2

criticism in their surveillance of the drilling and consequently Michigan's Governor requested the IOCC furnish a task force of its members, consisting of a broad spectrum of talents, to review the Michigan regulatory laws, enforcement and personnel. Michigan has appropriated sufficient funds to cover all costs involved. It is likely that I will be called upon to work with this task force.

The Environmental Protection Committee, of which I am Chairman, had an interesting meeting. We were addressed by Mr. Arne Gubrud from the American Petroleum Institute, who spoke on the contribution of oil companies to environmental protection efforts. He pointed out that the industry is expending in excess of \$3 million dollars a day in this work.

The next meeting of the Compact is scheduled for December 2 to 5, 1973.

For release upon delivery
June 11, 1973

The Burnham Coal Gasification Complex

by

J. P. Musick, Jr.

To be presented before the Public Lands Committee
Interstate Oil Compact Commission Midyear Meeting
June 11, 1973
Tulsa, Oklahoma

THE BURNHAM COAL GASIFICATION COMPLEX

By J. P. Musick, Jr.
Manager, Community Services
Synfuels Services Department, Synfuels Division
El Paso Natural Gas Company
El Paso, Texas

At the outset, may I express the appreciation of all of us at El Paso for your gracious invitation to share with you some of the details of what we consider to be a most significant and worthwhile project.

As many of you here today are aware, El Paso announced last year that it plans to construct the world's first commercial plant for the conversion of coal into a synthetic high Btu gas suitable for pipeline transmission. This announcement stated that the complex would be located in New Mexico near El Paso's existing pipeline system.

On November 15 of last year, El Paso filed an application with the Federal Power Commission for approval to construct the Burnham Coal Gasification Complex, some 35 miles south of Farmington, New Mexico, on the Navajo Indian Reservation. That application is now under consideration by the FPC.

Today, I wish to further explain to you this historic facility, and to discuss its significance to the United States. I do not plan today to belabor the very serious energy, and more particularly, natural gas shortage faced by this nation before a group such as this. Someone said recently that if all the energy consumed in making energy studies could be diverted to other uses, there wouldn't be an energy shortage. And, indeed, it does seem that way.

However, the very sobering facts of the energy shortage have prompted El Paso to investigate other sources of gas supply in recent years, for example: increased conventional exploration efforts, both foreign and domestic; the development of underground nuclear stimulation technology; a proposal to bring base load supplies of liquified natural gas into the east coast of the U. S. from Algeria; a feasibility study, now underway, to build a pipeline across the State of Alaska to its southern coast; and the possible construction of an energy complex on the Gulf Coast near Corpus Christi.

In recent years, El Paso has acquired substantial reserves of low-sulfur coal in the West. The idea of coal gasification is, of course, not new. El Paso has conducted research in the field since the early 1950's. But only recently has the national energy situation become such that the public interest requires a decision to move forward with building the commercial-sized coal gasification complex you will hear about today.

El Paso purchased, in 1968, a 40,286-acre coal lease from the Navajo Indian Tribe. The lease is located in San Juan County, New Mexico, approximately 35 miles south of the City of Farmington. An extensive evaluation program has recently been completed. The coal underlying this lease is sub-bituminous and comes from the Fruitland Formation. It is upper-Cretaceous in age. Four principal coal seams have been ascertained and mapped, ranging in depth from less than 20 feet of overburden to over 200 feet of cover. In addition to the four main seams, numerous other less consistent and thinner seams are present in many areas of the lease. On this lease there are more than 700 million tons of recoverable coal under less than 150 feet of cover. These are all proven reserves. They do not include additional reserves which are inferred but not proven. These coal deposits can be readily surface mined.

The coal is adaptable to gasification processes and can thus be used both to contribute to the Western economy and to aid in solving the nation's environmental problems. Of considerable economic and environmental significance is the fact that there are three existing El Paso pipelines -- two 24-inch and one 34-inch -- situated on or adjacent to the coal lease.

The cost of the entire project, including the coal mine and the gasification complex and facilities, is estimated to be in excess of \$420 million. The gasification complex itself is designed to produce 250 million cubic feet per day of 972 Btu per cubic foot gas.

Conventional natural gas now delivered by El Paso is almost wholly methane. The product of the coal gasification complex will also be primarily methane and will be interchangeable with conventional natural gas.

Only one commercially proven high pressure process exists today for converting coal to synthetic gas. This is a process developed by a West German firm, Lurgi Mineraloltechnik GmbH and referred to as the "Lurgi Process." It has been utilized in some 12 plants around the world and is the process El Paso will use. No such commercial gasification facility exists in the United States today, although several processes are under study. All of these processes under study in this country involve essentially the same chemical principle.

Basic coal gasification involves adding oxygen and steam to coal under conditions of heat and pressure to form a synthesis gas composed of hydrogen, carbon oxides, methane, and various sulfur compounds. The carbon dioxide and sulfur compounds are then removed, leaving a usable gaseous fuel having a low Btu content. This gas is sometimes referred to as "town gas." To this process El Paso will add a further step, methanation, which will increase the heating value of the gas from about 415 Btu to 972 Btu per standard cubic foot. This process will be accomplished by catalytically reacting the carbon monoxide and hydrogen to produce methane and water. The gasification complex will be located on the lease and near El Paso's pipeline system. The complex area will cover about 960 acres. It will be modern, attractive, and esthetically sound.

The coal mine will be one of the largest in the United States. The gasification complex, when fully operational, will process over 26,000 tons of coal per day, or about 9 million tons per year. The proposed mining plan is quite similar to that being employed successfully in numerous surface mines throughout the world.

El Paso has engaged the Stearns-Roger Corporation, Denver, Colorado, to prepare a definitive complex design and cost estimate, which should be complete by the end of this year. FPC certification may require some 18 months. After FPC approval, about 2½ years will be needed to construct the complex. Hopefully, initial gas production will begin in early 1977.

In addition to engineering studies currently underway, extensive environmental investigations are in progress.

Substantial amounts of water will be necessary in order to gasify the presently proven, recoverable coal reserves on this lease. The acquisition of dependable, long-range supplies of water is vital to such a project. The energy output of the proposed complex is large -- equivalent to that of a 3,000 megawatt electric generating plant, but requiring less than one-fourth of the water required by such a plant. As stated before, the lease contains, conservatively, some 700 million tons of recoverable coal. To gasify this much coal will require almost 30,000 acre-feet per year for three complexes with a 25-year life. Negotiations are currently underway with the Bureau of Reclamation to purchase water from the Navajo Reservoir, at a diversion point downstream of the Reservoir in the San Juan River north of the complex site. For this first gasification complex, producing 250 million Cfd of pipeline quality gas, approximately 10,000 acre-feet of water per year will be required.

We are well aware that a project of this magnitude and duration will have an impact on the environment. This has been carefully considered from the beginning of our planning, and it will continue to receive foremost consideration in the construction and operation of both the gasification complex and mine. Our investigations indicate that the project will have minimal effect on the environment. Air and water pollution are not expected to be problems.

Both the plan for mining the coal and the plan for restoration of the mined area are subject to approval by the Navajo Tribe, the Department of Interior and the Bureau of Indian Affairs. The

project must also comply with applicable laws of the State of New Mexico, as well as federal regulations resulting from the National Environmental Policy Act, to assure that all operations are in the public interest. In addition, at least three federal governmental agencies will review the project plans. These agencies include the Federal Power Commission, the Department of Interior, and the Department of Transportation.

The mined area will be reclaimed as a part of the mining operation. The planned reclamation activities include burial of the ash generated by the gasification complex, grading of overburden, reseeding of graded areas and controlled utilization of the reclaimed and revegetated areas until seeded vegetative cover is established. The mined land will be returned to productive use, in consultation with the Navajo Tribe, Federal, State, and private agencies. Where soil conditions and topography will permit, surface runoff water will be directed into constructed lakes and stock watering ponds for use by resident ranchers and sheep grazers.

We plan to take every reasonable step to guarantee that no part of the project will adversely affect the environment. In this matter, may I add one personal note: For some 22 years, El Paso has carried on its business in the Four Corners area. The Company has the reputation of being a good citizen, good neighbor, and a good housekeeper in all its operations. We intend to continue these practices.

The project will provide benefits of major significance, not only to the Navajo Tribe, to the State of New Mexico, and the adjoining area, but to the entire country.

(1) The project will supply substantial amounts of much-needed energy in the form of a fuel which when burned produces virtually no pollution. This new technology could have far-reaching effects on the energy shortage of the country, perhaps far beyond the imagination of most of us here today.

(2) The economic and social impact on the State of New Mexico, the Navajo Tribe and this general area will be immediate, substantial and will make a continuing contribution to the business and, more important, the well-being of many of the people who live and work there.

The construction phase of the complex will require up to 3,000 employees for a period of 2½ years, with a peak annual payroll of \$30 million.

The operational phase of the completed gasification complex and coal mine will provide approximately 941 new jobs, with an annual payroll estimated to be \$11.7 million. In addition to these employees, the complex will supply indirect support of 1,500 service jobs in the area. New people will be absorbed into the existing communities in the area, although many employees will live nearby on the reservation. It is El Paso's intent to train and employ a maximum number of personnel from the Navajo Tribe.

In addition to such employment, the Tribe should realize annual royalty and rental payments in excess of \$2 million annually.

Taxes payable to Federal, State, and local entities will amount to an estimated \$15 million annually.

Of equal importance -- perhaps greater importance -- are the social, educational, and cultural benefits which can be provided for many citizens of this area and their families. It is impossible to place a value on such things, and yet, in the final analysis, they are perhaps the most valuable of all.

INNER OFFICE MEMORANDUM

June 8, 1973

TO: John Bannister
FROM: J. N. Conley
SUBJECT: American Association of Petroleum Geologists (AAPG),
58th Annual Meeting, Anaheim, California,
May 14-16, 1973

Two other scientific organizations, Society of Economic Paleontologists and Mineralogists (SEPM) and the Society of Exploration Geophysicists (SEG) hold their annual meetings concurrently with AAPG. Joint sessions of AAPG-SEPM-SEG are held the first day; for the balance of the meeting each society has its own sessions. This creates a problem when two or more papers you wish to hear are scheduled at the same time.

There were two papers directly pertaining to Arizona. Of positive interest to me, and the Commission, was the one by C. A. Ross: Sedimentary environments, Pennsylvanian and Early Permian, southeastern Arizona. This was an excellent paper. We will be able to use to good advantage the various maps and cross sections presented. Of possible economic significance are the massive, lenticular carbonate banks enclosing the Cochise County portion of the Pedregosa basin. If present in the subsurface these banks possibly offer petroleum accumulations. They are frequently oil-productive in many parts of the world.

I succeeded in hearing most of the sessions dealing with remote sensing techniques in exploring for petroleum and other natural resources. Various practical applications were presented in the papers, particularly those dealing with various kinds of aerial photography. One paper discussed the impact of NASA's Earth Resources Technology Satellite (ERTS). Evaluation of this space photography is being made by many scientists throughout the world covering many disciplines, including mineral and land resources, agriculture and forestry, environment, water resources, land use, etc. Results indicate important findings relative to petroleum.

(Note: Some of the ERTS photography covering Arizona is being evaluated by the United States Geological Survey and various academic institutions. To my knowledge, none of the evaluation studies being conducted in Arizona are concerned directly with a search for petroleum and geothermal resources. Some of the geologic information being developed, could be used in searching for these two resources, particularly that by the U.S.G.S. group in Flagstaff

John Bannister
June 8, 1973
Page Two

and the Office of Arid Lands Studies, University of Arizona. I understand that the arid land studies group can get "healthy" financial assistance from NASA for various types of projects on arid lands. As we can expect no more financial help from the Four Corners Regional Commission we should investigate the possibilities of getting the arid lands group to make some studies for us.)

There were several papers dealing with the economics of energy from coal, oil shale, uranium (for nuclear plants) and geothermal resources. To meet future energy requirements coal must be used more extensively. It is our most abundant source. It now accounts for only about 19 percent of the nation's energy production and use. The price of uranium must be increased appreciably if future requirements are to be met. Several speakers mentioned that it is essential that the public recognize that trade-offs are necessary between our energy and our environmental goals.

Carol Otte, Union Oil Company, talked on geothermal energy for electric power generation. The Geysers steam field in northern California has proved to be a viable, mechanically sound, and economic resource. He estimated that this field has a potential production in excess of 1,000 Mw. The National Petroleum Council estimates that by 1985 about 15,000 Mw of geothermal power can be developed in the western United States.

I generally get some worthwhile information from casual conversation with geologists at conventions. This time I did not fare so well, but I picked up a few items of interest.

1. Texas Instruments, Dallas, has identified on ERTS photos many large linear features in Arizona, New Mexico, Mexico and west Texas; some intersect near mining districts.
2. Two geologists, who in past years have done lots of work in the Colorado Plateau province of Arizona, believe that the northeast part of the state has good oil potential.
3. American Stratigraphic Company would like to make a detailed study of the drill bit cuttings of the Exxon stratigraphic test near Eloy, which will be available in July of this year, but will not attempt to do so without direct permission from Exxon. This company is one of their best clients.

JNB

J. N. C.

JNC:st



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161

June 6, 1973

Memo: Commissioners
From: John Bannister

As previously reported, I will attend the IOCC meeting on June 10th. This is being held in Tulsa and I will attend as the Governor's official representative and as a member of various committees. A full report will be made to you at our next meeting.

You have been advised by phone that Mr. Roger Hafford will not be with us in June, consequently it will be necessary that all of you attend in order that we have a quorum. Should something prevent your attending on June 15th, please advise at the earliest possible moment.

It has been necessary to suspend operations on the geothermal well near Chandler due to the fact that extremely salty water was being brought to the surface, with no safe means of disposal once the pits were full. This well was being pumped to try to remove this water from the formation and to allow heated water to enter. The company is currently drilling the second well nearby and it is anticipated at this time that one of the two wells will be turned into an injection well wherein water produced from any well will be reinjected into the formation of this reinjection process and prevent contamination of fresh waters in the area and also act to recharge the aquifer feeding the heat source with water (I hope). We will keep you advised of the progress here.

Most of the current drilling activity is centered in the extreme northeastern section of Arizona and is primarily concerned with a small gas discovery of American Fuels Corporation. This discovery was reported to you earlier. The company is seeking to develop sufficient gas to warrant El Paso Natural Gas or another distributor in laying lines to gather this fuel.

A situation is developing in the East Navajo Springs Helium Area. You will recall this Commission, after a hearing, allowed special spacing units in this area consisting of 160 acres, i.e. a governmental quarter section, to develop in the Shinarump formation. As

Memo: Commissioners
6-6-73
Page 2

part of this field development, Western Helium Corporation drilled a well in Section 36, Township 20 North, Range 27 East. Portions of three leases were originally dedicated to this drilling site in order to meet the State requirement of 640 acres for a gas well. The original owner of the leases began to communitize the section, however, after formation of the special spacing units, communitization efforts apparently ceased. Now, one of the leases involved in the quarter section dedicated to this well is expiring, consequently we will be faced with a situation of a spacing unit now being incorrect. The owner of the expiring lease has requested the State Land Department to put the lease up for bid. This situation will be discussed with you at the next meeting. I do not anticipate any particular problems, inasmuch as the well in question only spasmodically produces. If it is necessary, the Commission will close this well in until the spacing situation can be resolved. No great financial damage will result to the operator.

The Commission's fiscal year will end June 30, 1973. In this respect, the books will be closed at that time, however pending claims may be paid from available funds through July.



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161
ACTIVITY REPORT

June 6, 1973

Memo from W. E. Allen, Director
Enforcement Section

A field trip to the northeastern part of the State has recently been completed. This trip was primarily routine with the exception of American Fuels Corporation's drilling and completion operations. This is a newly organized company and we knew nothing of their methods of operation. On this trip I found that this company was conducting their operations in a workman like manner and they are building a very favorable reputation to the service industry. American Fuels' reports to the Commission have been very complete and prompt. It is indeed a pleasure to work with a company that has exhibited the type of cooperation they have shown this Commission.

Other operators, with few exceptions, whose properties we visited were adhering to the regulations established by the Commission. It was necessary to caution Williams Energy Company on disposal of waste salt water at their Adamana LPG Storage Project. Their operations were re-checked last week and they were ponding all their waste water. I still have not succeeded in making Eastern Petroleum Company install well signs at all their locations in the Navajo Springs area. Given

Page 2
Activity Report - June 6, 1973
W. E. Allen

time I may be successful in having the signs installed. I have only been working on this project for three years!

Western Helium is in the process of adding additional equipment to their existing plant. This equipment will enable Western to salvage the nitrogen from production field gas for use in the extracting process of the helium. Presently, Western is buying the nitrogen needed for use in their Navajo Extraction Plant.

Geothermal Kinetics Systems, Inc., has started drilling operations on their Power Ranches No. 2. This location, as previously reported, is 1320' north of the original test hole.

Geothermal Kinetics ran a Reda downhole pump in their Power Ranches No. 1 Well. This well pumped hot water for approximately a week. The operators ran out of space to contain the water and had to shut the well in, (Preliminary analysis of the produced water indicates some 30,000 PPM of total combined solids). Another rig is being moved in to pull and service the pump and to allow the operators to perform further completion work on their No. 1 Well.

Since the last report, American Fuels have been issued permits for the drilling of three additional wells, all in Apache County. The locations are:

Navajo "E" No. 1
SE/SW Section 31-T41N-R28E
7200' test to Mississippian

Navajo "G" No. 1
SW/SW Section 34-T41N-R28E
7800' test to Devonian

Page 3
Activity Report - June 6, 1973
W. E. Allen

Navajo "O" No. 1
NE/NW Section 3-T36N-R28E
4000' test to Mississippian

Of the three wells previously drilled by this operator, none have been finalized. All three have indicated small shows of oil and gas. Additional work is planned.



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Oil and Gas Conservation Commission

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ACTIVITY REPORT

June 5, 1973

J. N. Conley
Director, Geology Section

PUBLICATIONS

Sources of Information Booklet. This completely revised and expanded booklet has been delivered to the State's offset printing office.

Subsurface Temperature Map of Arizona. Requests for this publication are now infrequent. The AAPG geothermal survey of North America has been completed under the auspices of the AAPG Research Committee. The following items are now available:

1. Basic data file -- 35,000 basic data records of oil-well, water-well and heat-flow information; and
2. A portfolio of approximately 45 computer-contoured and labeled geothermal gradient maps (1:1,000,000).

This Commission furnished most of the data for the preparation of the Arizona portion of Map 18 in the portfolio.

County Well Location Maps. Budget limitations preclude printing the Yavapai, Mohave and Pima-Santa Cruz maps this fiscal year. The Holbrook area map, which covers portions of Apache, Coconino, Gila and Navajo Counties, however, will be completed by June 30th. The format and other details of this particular map were presented in the ACTIVITY REPORT dated March 7, 1973.

Activity Report
June 5, 1973
Page Two

INVESTIGATIVE PROJECTS

Compilation of Important Paleozoic Stratigraphic Sections. Ed Koester has completed this compilation. The tabulation and an accompanying map showing the location of the various measured sections hopefully will be published in the second or third quarter of the forthcoming fiscal year.

Basement Map. A map of the "Holbrook" basin and adjacent area to the north by Ed Koester, showing depth to basement rock, the sea level datum, and lithology, has been completed. The regional configuration of the basement surface is shown by 500-foot (locally 250-foot) contours. No attempt has been made yet to integrate the geological and geophysical information into a composite interpretation.

Oil, Natural Gas, and Helium Pools, Arizona. The basic data, geophysical logs and many lithologic logs, of the wells drilled in the six producing or shut-in oil and gas pools, the five abandoned pools, and the three helium pools in the State are contained in the files of The Commission. Very little information has been published on the structure, stratigraphy and trapping mechanism of these pools. Much of the limited information published was during the early stages of development, and needs to be updated. A current investigation of two pools is now in progress by Ed Koester (Dineh-bi-Keyah) and Jim Scurlock (East Boundary Butte).

Next month The Commission will have printed, in chart form, data pertaining to: 1) occurrence and geologic age of oil and gas shows in the State; and 2) currently productive, shut-in, and depleted oil and gas pools. A small-scale map on the reverse side of the chart will show the location of the pools and the geologic regions.

GENERAL

One of our few visitors this past month was a consultant geologist-engineer, Russ Henderson, Cortez, Colorado. He has been retained by a major company to investigate the uranium potentialities of an area east of the south portion of the Petrified Forest National Park. He examined the radioactivity logs of core holes drilled in the area.

* * * * *

M. E. Cooley, U. S. Geological Survey, Tucson, has advised Jim Scurlock that the Arizona Geological Society is considering reprinting or updating the Arizona Highway Geologic Map. This

Activity Report
June 5, 1973
Page Three

map, explanation and geologic history, compiled by Cooley, and published in 1967, is now out-of-print. At the 1:1,000,000 scale it is a very useful map to use in conjunction with the published residual aeromagnetic map and the soon-to-be published Bouguer gravity map of Arizona. Hopefully the Society can find funds to print an updated edition of the map.

He also advised Scurlock that the Society plans to prepare a tectonic map of the State. There is a positive need for such a map.

* * * * *

Jim Scurlock attended recently a one-week photo-interpretation workshop sponsored by Arizona Resources Information Systems. He reports that it was well planned and very informative.

* * * * *

P. K. Hurlbut, petroleum geologist with the Navajo Tribe, has resigned to go to work for Phelps Dodge. From The Commission's standpoint, it is hoped that the Tribe plans to replace him with a competent and experienced geologist to continue the regional subsurface studies of the reservation he had underway.

* * * * *

A special report in the May 24, 1973 edition of PETROLEUM INFORMATION lists some interesting cost figures for oil, gas and dry holes in the Rocky Mountain states. The cost of dry holes (nationally, nine or more of every ten wildcat holes are dry--the rate is much higher in frontier areas) ranged from a low of \$6.76 per foot in Colorado to a high of \$44.29 per foot in Utah for 1972 drilling. Cost per foot figures for wildcat wells in Arizona will probably range from a low of \$10.00 plus per foot to a high in excess of \$40.00 per foot, depending upon the area and depth. Cost per foot for geothermal holes will be proportionately higher.

JP

ACTIVITY REPORT

June 5, 1973

TO: J. N. Conley
FROM: E. A. Koester

A map showing the depth to the Precambrian, lithologic character of the rocks found and datums on the top of the Precambrian for "the Holbrook Area" has been completed and ready for the draftsman.

With the help of publications and theses of graduate students loaned by Dr. J. J. Wright of the University of Arizona and Dr. Wes Peirce of the Arizona Bureau of Mines, I have been able to just about complete the map showing the principal outcrop sections of Paleozoic rocks of the state. Since there is a possibility that additional data may be secured later and there is little likelihood of immediate publication of this map, work on it has been temporarily suspended.

Additional study has been made of the thicknesses of Paleozoic systems, largely as the result of new data obtained in the preparation of the map of Paleozoic outcrop sections. This has resulted in a refinement in the interpretation of the data rather than a major change in our understanding.

As the largest oil and gas field found to date in Arizona, the Dineh-bi-Keyah field in Apache County is of major interest to all petroleum seekers. Production from a syenite sill intruded into Pennsylvanian rocks puts it in a unique category. Earlier reports on the field by Henry Pohlman, formerly with the Navajo Tribe, and McKenney and Masters with Kerr-McGee Corporation were prepared before completion of development drilling. Most recent wells on the west side of the field raise the question whether very sharp dip or a major fault is present below the surface syncline mapped on the base of the Dakota sandstone (Cretaceous). The location of the field on the northwest plunge of the Toadlena anticline is of interest inasmuch as no similar oil production has been found elsewhere on this anticline although several wells at much higher structural locations have been drilled. The presence of additional helium reserves likewise is important. Work on this field has just begun.

EAK:st

MONTHLY FINANCIAL REPORT

1 RECEIPTS MONTH OF	2 CLASSIFICATION	3 RECEIPTS	4 APPROPRIATED RECEIPTS	5 UNAPPROPRIATED RECEIPTS	6 TOTAL ALL RECEIPTS YEAR TO DATE
Apr 1973	1 Permits to Drill			25 00	600 00
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
25 00	TOTAL CURRENT MONTH RECEIPTS			25 00	XXXXXX
XXXXXX	TRANSFERS IN				
XXXXXX	BALANCES BROUGHT FORWARD			2,951 83	XXXXXX
25 00	TOTALS - MONTH AND YEAR TO DATE			2,976 83	600 00

6 CLAIMS PAID MONTH OF	7 EXPENDITURES FUND TITLES	8 TOTAL AMOUNT AVAILABLE YEAR TO DATE	9 CLAIMS PAID YEAR TO DATE	10 OUTSTANDING ENCUMBRANCES	11 UNENCUMBERED BALANCE
Apr 1973	1 Personal Services	94,238 00	76,721 90	-	17,516 10
3,737 74	2 Emp. Related Exp.	11,025 00	7,801 73	-	3,223 27
950 17	3 Professional Services	2,200 00	1,919 00	-	281 00
325 00	4 Travel - State	8,550 00	3,411 18	2,014 12	3,124 70
546 32	5 Travel - Out of State	3,500 00	1,576 73	-	1,923 27
348 36	6 Other Operating Exp.	32,500 00	30,599 90	870 90	1,029 20
4,828 38	7 Capital Outlay-Equip.	4,310 00	3,472 05	-	837 95
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18,111 48	TOTALS	156,323 00	125,502 49	2,885 02	27,935 49

CLAIMS PAID
YEAR TO DATE

OBJECT
CODE NO.

DISTRIBUTION OF EXPENDITURES

CLASSIFICATION

CLAIMS PAID
MONTH OF

April 1973

1,230.00	7111	1	Per Diem: Commission Members	1	120.00
75,491.90	7112	2	Salaries: Employees	2	7,617.74
366.63	7151	3	Industrial Insurance	3	123.61
2,673.49	7153	4	F.I.C.A.	4	445.64
3,775.06	7155	5	Retirement	5	380.92
750.30	7156	6	Health Insurance	6	
236.25	7159	7	Personnel Commission	7	
		8		8	
	7215	9	Professional Services: Engineer	9	
1,919.00	7219	10	Professional Services: Other	10	325.00
		11		11	
544.40	7221	12	Travel - State: Mileage	12	28.40
1,276.00	7222	13	Subsistence	13	77.00
	7223	14	Public Transp.	14	
1,537.12	7224	15	Vehicle Expense	15	437.51
536.66	7225	16	Reg. Fees; Parking; etc.	16	3.41
		17		17	
500.00	7232	18	Travel - Out of State: Subsistence	18	93.00
870.78	7233	19	Public Transp.	19	165.36
	7234	20	Airport Parking	20	
205.95	7235	21	Reg. Fees; Telephone; etc.	21	90.00
		22		22	
22,193.52	7251	23	Occupancy: Office Rent	23	3,698.92
	7261	24	Warehouse Rent	24	
	7263	25	Warehouse Mtn. & Repair	25	
332.49	7272	26	Mtn. & Repairs: Furn. & Equip.	26	
2,120.24	7280	27	Office Supplies	27	161.74
1,169.69	7300	28	Field Supplies; Film; Am.Strat; P.I., etc.	28	55.27
1,644.99	7331	29	Printing: Reports; Large Maps; etc.	29	426.40
	7332	30	Legal Advertisement	30	
24.50	7333	31	Court Reporter, Notary Commission, etc.	31	
632.69	7334	32	Postage	32	92.00
2,035.09	7335	33	Telephone	33	365.45
17.82	7337	34	Drayage; Express; etc.	34	
67.27	7349	35	Rental, Misc.	35	
111.60	7360	36	Dues & Subscriptions	36	28.60
		37		37	
47.57	7431	38	Capital Outlay: Office Equip; Tpr; etc.	38	47.51
96.54	7434	39	Spec. Equip. (Geol.)	39	
3,328.00	7436	40	Automobile	40	3,328.00
		41		41	
250.00	7913	42	Revolving Fund	42	
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		54		54	
		55		55	
125,502.49			TOTAL		18,111.48

MONTHLY FINANCIAL REPORT

RECEIPTS MONTH OF <i>May 1973</i>	CLASSIFICATION	RECEIPTS	APPROPRIATED RECEIPTS	UNAPPROPRIATED RECEIPTS	TOTAL ALL RECEIPTS YEAR TO DATE
<i>100.00</i>	1 Permits to Drill			<i>100.00</i>	<i>100.00</i>
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<i>100.00</i>	TOTAL CURRENT MONTH RECEIPTS			<i>100.00</i>	<i>XXXXXX</i>
<i>XXXXXX</i>	TRANSFERS IN				
<i>100.00</i>	BALANCES BROUGHT FORWARD			<i>2,976.83</i>	<i>XXXXXX</i>
	TOTALS - MONTH AND YEAR TO DATE			<i>3,076.83</i>	<i>100.00</i>

CLAIMS PAID MONTH OF <i>May 1973</i>	FUND TITLES	TOTAL AMOUNT AVAILABLE YEAR TO DATE	CLAIMS PAID YEAR TO DATE	OUTSTANDING ENCUMBRANCES	UNENCUMBERED BALANCE
<i>7,739.74</i>	1 Personal Services	<i>94,238.00</i>	<i>84,452.64</i>		<i>9,781.36</i>
<i>1,214.20</i>	2 Emp. Related Exp.	<i>11,025.00</i>	<i>9,016.43</i>		<i>2,008.57</i>
<i>219.00</i>	3 Professional Services	<i>2,200.00</i>	<i>2,138.00</i>		<i>62.00</i>
<i>346.42</i>	4 Travel - State	<i>8,550.00</i>	<i>3,757.60</i>	<i>1,764.34</i>	<i>3,028.06</i>
<i>649.62</i>	5 Travel - Out of State	<i>3,500.00</i>	<i>2,226.35</i>	<i>421.06</i>	<i>852.59</i>
<i>263.99</i>	6 Other Operating Exp.	<i>32,500.00</i>	<i>30,863.89</i>	<i>691.03</i>	<i>945.08</i>
<i>-0-</i>	7 Capital Outlay-Equip.	<i>4,310.00</i>	<i>3,472.05</i>	<i>736.95</i>	<i>101.00</i>
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<i>10,428.47</i>	TOTALS	<i>156,323.00</i>	<i>135,930.96</i>	<i>3,613.38</i>	<i>16,778.66</i>

CLAIMS PAID YEAR TO DATE	OBJECT CODE NO.	DISTRIBUTION OF EXPENDITURES			CLAIMS PAID MONTH OF
		CLASSIFICATION			May 1973
1,230.00	7111	1 Per Diem: Commission Members	1		
83,226.49	7112	2 Salaries: Employees	2	7,734.74	
366.63	7151	3 Industrial Insurance	3		
3,122.56	7153	4 F.I.C.A.	4	449.07	
4,161.82	7155	5 Retirement	5	386.26	
1,050.42	7156	6 Health Insurance	6	300.12	
315.00	7159	7 Personnel Commission	7	78.75	
	7215	8	8		
2,138.00	7219	9 Professional Services: Engineer	9		
		10 Professional Services: Other	10	219.00	
		11	11		
544.40	7221	12 Travel - State: Mileage	12		
1,410.00	7222	13 Subsistence	13	134.00	
	7223	14 Public Transp.	14		
1,729.04	7224	15 Vehicle Expense	15	191.92	
74.16	7225	16 Reg. Fees; Parking; etc.	16	20.50	
		17	17		
660.00	7232	18 Travel - Out of State: Subsistence	18	160.00	
1,309.40	7233	19 Public Transp.	19	438.62	
	7234	20 Airport Parking	20		
256.95	7235	21 Reg. Fees; Telephone; etc.	21	51.00	
		22	22		
22,193.52	7251	23 Occupancy: Office Rent	23		
1.00	7261	24 Warehouse Rent	24	1.00	
	7263	25 Warehouse Mtn. & Repair	25		
332.49	7272	26 Mtn. & Repairs: Furn. & Equip.	26		
2,244.36	7280	27 Office Supplies	27	124.12	
1,184.19	7300	28 Field Supplies; Film; Am.Strat; P.I., etc.	28	14.50	
1,696.99	7331	29 Printing: Reports; Large Maps; etc.	29	52.00	
	7332	30 Legal Advertisement	30		
24.50	7333	31 Court Reporter, Notary Commission, etc.	31		
632.69	7334	32 Postage	32		
2,083.46	7335	33 Telephone	33	48.37	
17.82	7337	34 Drayage; Express; etc.	34		
67.27	7349	35 Rental, Misc.	35		
135.60	7360	36 Dues & Subscriptions	36	24.00	
		37	37		
47.51	7431	38 Capital Outlay: Office Equip; Tpr; etc.	38		
96.54	7434	39 Spec. Equip. (Geol.)	39		
3,328.00	7436	40 Automobile	40		
		41	41		
250.00	7913	42 Revolving Fund	42		
		43	43		
		44	44		
		45	45		
		46	46		
		47	47		
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		50	50		
		51	51		
		52	52		
		53	53		
		54	54		
		55	55		
135,930.96		TOTAL		10,428.47	

TO: Activity Report File

May 30, 1973

FROM: J. R. Scurlock

Telephone conversation with Spade Cooley (USGS, Tucson) reveals that:

1. The State Highway Geologic Map is now out of print. This went to press in 1967 with 10,000 copies. Price - \$1.75. Some of the mining companies contributed toward the printing cost, which was \$9,000. Arizona Geological Society now considering whether to reprint or update. Printing costs have skyrocketed. If they go reprint, something like 5,000 copies will be run off; price will be increased. If map is up-dated, about the only change will be with the volcanics in the western part of the state. Contact lines are essentially okay, but major change will be in the aging reference letters which should indicate that the volcanics are of a mid-Tertiary age.
2. The Society is now undertaking the project of preparing for publication a tectonic map of Arizona. (We are sending them our Structure Map of Northern Arizona.) Cooley will ramrod the working committee which will consist of essentially the same group that prepared the highway map. The group includes a few mining geologists who work for the companies.
3. Cooley will be looking at a lot of photography from Skylab if and when we start receiving it. I presume this is in connection with his study of the tectonics. These satellite photos reveal lineations which are not readily perceptible from the ground or from low altitudes. These lineations can then be checked out to see if they represent faulting.

Arizona Remote Sensing Short Course

The photo-interpretation workshop sponsored by ARIS was held during the week May 21-25. Since Jack Conley was unable to attend due to convalescence from a recent eye operation, I was appointed to attend these classes. They were extremely well planned, most informative and enjoyable. Attendance: 22 students, 4 lecturers. Main lecturer: Dr. Gene Avery, Department of Forestry, NAU. Avery is the author of the textbook that we used, Interpretation of Aerial Photographs, a copy of which was given to our office.

As a future project I would suggest that we might consider the idea of estimating dips and strikes on low altitude photos which we might borrow from some governmental agency. These dip and strike symbols on a base map could then be translated into rough form lines and then tied into the surface and subsurface structural data, thus providing us with a means of making detailed structural studies of small areas of the Colorado Plateau Province.

ADDITIONS TO ACTIVITY REPORT

J. R. Scurlock

June 5, 1973

Mr. Charlie Miller was in the office. A geologist from Hobbs, New Mexico; an old timer. He has been watching southwestern New Mexico. Says he has a set of the samples on the Silas S. Newton well located near Lordsburg -- a promotional well which was drilled to a depth of about 7,000 to 9,000 feet. I wonder if it might be to our advantage to see if we could get Amstrat (or perhaps Dick Hollinsworth) to run these samples. As I vaguely recall, this well is located in a rather strategic position for control in the Pedregosa Basin.

Miller also indicated that Mr. Cockrell had died. Apparently much of the Cockrell data is now available on his wildcats in southwestern New Mexico. Also understand that New Mexico (presumably the New Mexico Commission) has published a scout ticket type bulletin very much like our bulletin 185, giving the formation tops and so forth of all the wells in New Mexico. Susie is writing to the New Mexico Commission to inquire about such a publication.

She will also inquire as to the availability of the Cockrell data.

Miller was also inquiring as to the availability of the well cuttings on the four Humble wildcats. The Eloy well will be released from the confidential file on July 27 of this year. I wonder if it might be worthwhile for us to make an extra cut of these Humble samples. Of course, we already have two cuts -- one to be sent to Wes Peirce. A third cut would serve as a loan set to be snipped about. Should I write to Amstrat to see if they could run these samples immediately after the July 27 release?

JRS:st

MEMORANDUM

July 5, 1973

TO: J. H. Conley

FROM: J. R. Scurlock

Telephone call from P. K. Hurlbut. The tribal council has indicated to him that they are terminating him effective June 30th. P.K. has now resigned his position with the tribe and will be moving to Tyrone, New Mexico to go to work for Phelps Dodge as an engineer, effective July 9th. Tyrone is located about five miles from Silver City. His address will be Post Office Box 302, Tyrone, New Mexico 88065.

JRS:st



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161

May 21, 1973

Memo: Commissioners
From: John Bannister

I went to Washington, D.C. on May 16th at the request of the Governor's Office and as approved by you. This meeting was called by Deputy Treasury Secretary William Simon to consider the energy crisis and the effect of environmental protection efforts on the crisis. In his telegram to the Governor, Mr. Simon requested that a spokesman be sent for Arizona.

The meeting was held in the Treasury Building on May 16th and, generally speaking, I was disappointed in the results. Secretary Simon was unable to attend and, as a result, the meeting became primarily an explanation of the Treasury Department's voluntary allocation system. This is a system whereby the manufacturers of energy will voluntarily allocate a portion of production to the ones to whom they sell. There is some question as to whether or not this might be violation of contract rights and, consequently, the Treasury Department plans hearings with the major oil companies within the next two weeks to determine whether or not the allocation system will become mandatory rather than voluntary. The Treasury Department further indicated that proposed rules and regulations as to the allocation system will be forthcoming within the next few weeks.

There was some discussion among the group, itself, as to particular state problems, however the federal government showed but slight concern. Our meeting was the end of a series of meetings with the other states. Present at this meeting were representatives of four gasoline marketing associations, members of a committee of business representatives from Arizona and California, and representatives of the Governors of Oregon, California, Arizona, Hawaii, Washington and Alaska.

Inasmuch as the May 18th meeting of the Commission was cancelled due to my trip to Washington, I will remind you that I will go to an IOCC meeting in Tulsa on June 10th. This trip has been previously approved by you. As you know, I am the

Memo Commissioners
5-21-73
Page 2

Governor's representative to this organization and am also Chairman of one of the committees and a member of another committee. I will be back in time for the Commission meeting on the 15th.

Commissioner Roger Hafford has indicated that he will not be present on June 15th for the Commission meeting. Should anyone else be unable to attend, we will not have a quorum. In such case, I request you advise this office as soon as possible so that all Commissioners may be so notified.



OFFICE OF
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May 14, 1973

Memo: Commissioners
From: John Bannister

As authorized by the Commission, I attended the National Conference on Geothermal Energy held on May 10 and 11th in Palm Springs. This meeting was called by Congressman Victor Veysey of California.

Among the principal speakers at this meeting were Senator Paul Fannin of Arizona; Mr. Norman Livermore, Secretary of the California Resources Agency; Dr. Joseph Barnea, Director of Resources of the United Nations; and John Rigg, Deputy Assistant Secretary of the Department of the Interior for Mineral Resources. The speakers all expressed great confidence in the future of geothermal energy.

The prime portion of the meeting was divided into six panels. The panels concerned themselves with access to federal lands for geothermal purposes, taxation, exploration development, production and utilization, and environmental considerations. The common theme running through each of the panels was the environmental impact statements being called for by the federal government. General consensus was that these impact statements provide considerable deterrent to exploration of any sort on federal lands.

The meeting was attended by a broad segment of both industry, federal and state governments.

It is interesting to note that the Ambassador from Kenya to the United Nations was present; his country is attempting development of geothermal energy within its boundaries.



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PHONE: (602) 271-5161

A G E N D A

Meeting *Cancelled*
May 18, 1973 *no quorum*
4515 N. 7th Avenue, Phoenix, Arizona

10:00 a.m.

Call to order

1. Approval of minutes of meeting of April 20, 1973
2. Report of Executive Secretary
3. Report of Enforcement Section
4. Report of Geology Section
5. Old Business
6. New Business
7. Adjourn

IF YOU ARE UNABLE TO ATTEND THIS MEETING, PLEASE NOTIFY
THIS OFFICE AS SOON AS POSSIBLE.



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
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May 9, 1973

Memo: Commissioners
From: John Bannister

The Independent Petroleum Association of America met in Phoenix May 5-8. The general theme of the meeting was the energy crisis and President Nixon's energy message. The general feeling of the body was that President Nixon's message and plans as revealed are in the nature of "too little -- too late" and will not actually accomplish the desired ends. Independents expressed the opinion that economic incentive, i.e., a more realistic wellhead price for oil and gas, is what will primarily accomplish a reduction of the difference between domestic supply and forecasted domestic needs. All apparently feel confident that the current shortages will be overcome, and ultimately the United States will again be in a position of adequate energies. Besides oil and natural gas, other forms of energy will be developed to put us in this position.

I was gratified to note that many of the people I talked to concerning Humble's leaving the State of Arizona were aware that one of the prime reasons for Humble's action was a question of priority of exploration dollars. Many felt that Humble in no way condemned the State, but, to the contrary, their reluctance to release information and to farm out acreage indicates favorable information. Many have pointed out that Humble has in several known instances walked away after conducting initial exploration until dollars permitted continuation of their effort. Humble, as many major companies, is in a position of a shortage of cash inasmuch as considerable monies are tied up in Alaskan oil leases and equipment, none of which have as yet returned any of the investment made. Humble also recently walked away from a \$640 million lease effort off the California coast. All things taken together, the independents do not feel that Humble's action in any way condemned the State.

I am most pleased to report that Jack Conley has apparently at last undergone a successful eye operation, and Jack is with us in "full swing".

Commissioners
Page Two

Since the last Commission meeting, and as previously reported, I monitored an energy crisis study during the AIME program in Phoenix the latter part of April. Jack Conley's paper was presented during my session and was far and away the best organized and presented paper of that particular session. Due to the eye operation undergone by Jack, Ed Koester and Jim Scurlock presented the paper. It was most favorably received.

Also, the Governor's Conference for Business and Industry was held at Carefree the first of May. Bill Allen and I were on the panel concerning itself with the energy crisis. This conference was quite well attended, and, I hope, a benefit to the audience.

Cal Gas indicated an interest in developing a storage terminal for LPG in the salt area west of Phoenix. They had a meeting recently with the county zoning authorities, which I attended. The county has indicated all willingness to cooperate in this effort; however, they are not sure if the county's zoning is concerned with the problem in this area. The meeting was informal and informative, and I think we can rest assured of the county's cooperation in this project.

I will attend the Geothermal Conference in Palm Springs beginning May 10, and a report will be made to you upon my return.

The Governor's Office has requested the Department of Economic Planning and Development (DEPAD) to make a full report to him on the energy crisis. We have been contacted concerning the situation in Arizona, and I am confident that our input will be far greater than any other department.



OFFICE OF

Oil and Gas Conservation Commission

STATE OF ARIZONA

4515 NORTH 7TH AVE.

PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

ACTIVITY REPORT

May 9, 1973

Memo from W. E. Allen, Director
Enforcement Section

This office continues to receive reports of gasoline supplies being curtailed to the independent marketeers. As you know, this Commission has no authority or responsibility in this field. We do keep the Office of Emergency Services (Civil Defense) informed of the information and complaints that are received and have set up a file for possible future reference on the situation as it exists in Arizona.

The taking of some 25,000 acres of oil and gas leases by Standard Oil Company of California in Yavapai County was reported at the last Commission Meeting. This Company has now acquired an additional 1,900 acres of State leases. While their play apparently is nothing to compare with the Humble (Exxon) lease play of a couple of years ago, it is encouraging. Just what their plans are for this newly acquired acreage has not been divulged. This Company may acquire acreage in the "Strip Country" also. One of their scouts has been spending considerable time in that area and I know of at least one royalty owner that has been contacted by Standard.

The State Land Department has temporarily withdrawn Maricopa, Yuma, Pima, Pinal, Graham, Greenlee and Gila Counties from now competitive geothermal leasing. The Land Department is making a study of these counties in an effort to determine any known geothermal areas, KGA. When and if the KGA's are defined, these areas will be offered for competitive leasing. The remaining portion of the counties will then be opened to regular leasing.

It seems to me that since every effort is supposedly being pursued to encourage the exploration for all energy resources within the State, that this move by the Land Department, at this particular time, is ill advised.

Geothermal Kinetics Systems, Inc., has installed a Reda Pump in their Power Ranches No. 1 in an effort to further evaluate the

Page 2
Activity Report
W. E. Allen

potential of this well. We are catching water samples from the well. These samples will be analyzed by the State Lab. to determine the quality of the water being produced. The operators have expressed a desire to dispose of this produced water through a part of the drainage system used by the Roosevelt Water Conservation District. Unless the produced water is suitable for crops and livestock, this requested method of disposal cannot be allowed by this Commission.

Permit No. 611 has been issued to Geothermal Kinetics Systems, Inc., for the drilling of the Power Ranches No. 2, in the SE/NE Sec 1-T2S-R6E, Maricopa County. This 6500' geothermal prospect is 1320' north of the No. 1 well.

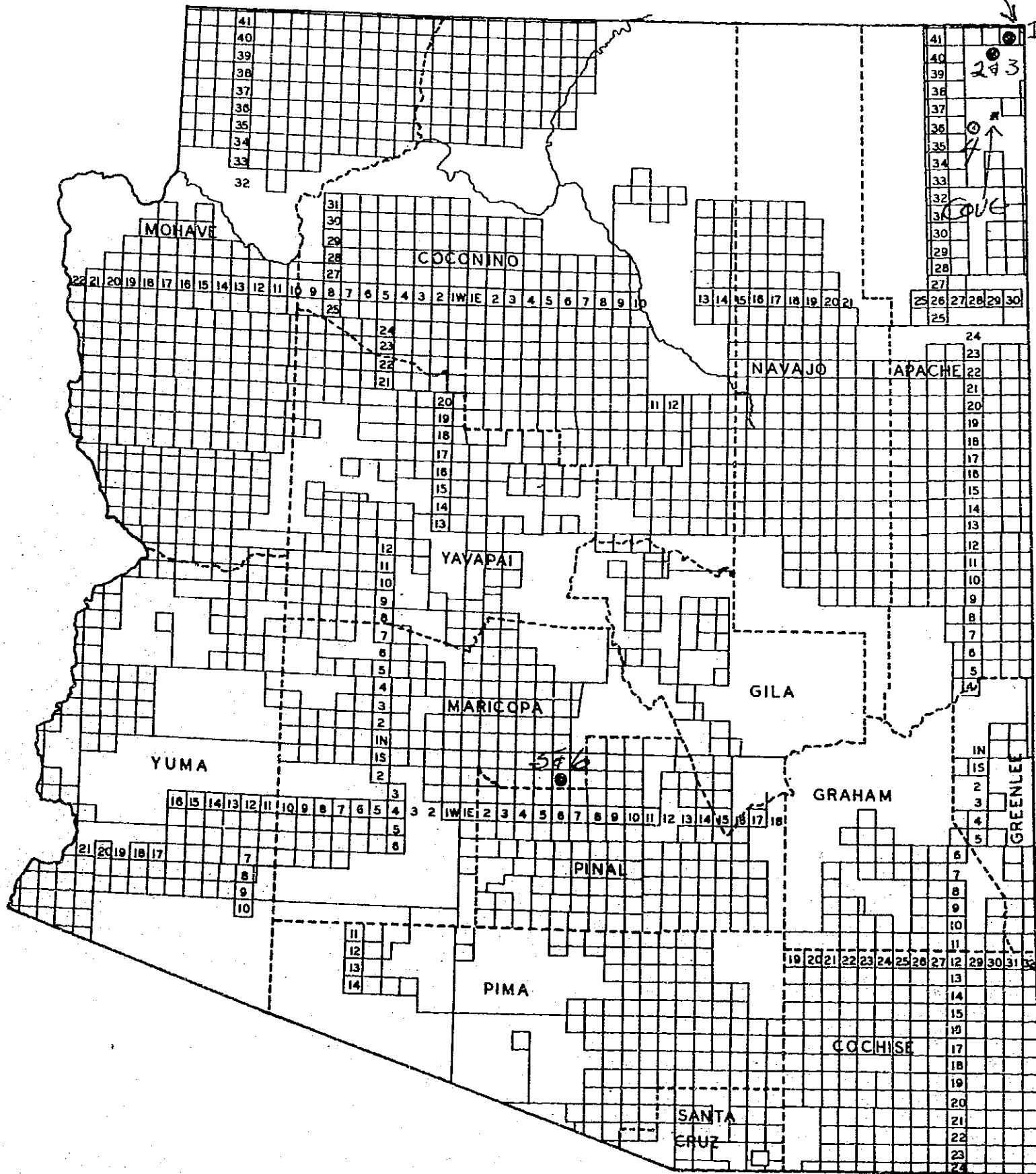
American Fuels Corporation has submitted an Application to Drill the Navajo "O" No. 1, NE/NW Sec 3-T36N-R28E, Apache County. This proposed 4000' test is approximately 8 miles northwest of Round Rock Trading Post and 5 miles southwest of Cove, Arizona. Issuance of the permit for the drilling of this well is withheld pending receipt of the performance bond.

American Fuels Navajo "C" No. 1, SW/SW Sec 6-T40N-R29E, Apache County is drilling below 4300'. This Company has completed initial tests on their Navajo "B" No. 1, SE/SW Sec 9-T40N-R29E, Apache County, and also on the Navajo "M" no. 1, SE/SW, Sec 16-T41N-R30E, Apache County. Both of these wells have shown some gas and small quantities of oil. The wells are presently shut-in while the operators evaluate their options. I would suspect that further completion work will be attempted.

We are sending along a booklet, "Oil Industry Issues" which tends to summarize the petroleum industry's stand on the issues relating to the industry that is of paramount importance today.

- No. 1 - American Fuels Navajo A-#1
 No. 2 & 3 - American Fuels Navajo C-#1 & Navajo B-#1
 No. 4 - American Fuels Navajo O-#1
 No. 5 & 6 - Geothermal Kinetics Power Ranches Nos. 1 & 2

TEEC Nos Pos





OFFICE OF
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PHONE: (602) 271-5161

May 9, 1973

ACTIVITY REPORT

J. N. Conley
Director, Geology Section

PUBLICATIONS

Energy Distribution Systems in Arizona. The principal distribution of this map has been to various state and county agencies and to power companies. It has been favorably received.

Sources of Information Booklet. This booklet has been re-written. It will be printed next month.

INVESTIGATIVE PROJECTS

Technical Assistance Grants. The contract with Four Corners Regional Commission specifies completion by June 30, 1973. The geophysical projects under Dr. John Sumner's supervision will be completed by June 15th. Richard Bruns has abandoned his Kaibab investigation in northern Arizona. The grant is unspent, and will be refunded to the Four Corners Regional Commission.

Tabulation of Important Stratigraphic Sections. Ed Koester reports that this project is about 90 percent completed.

Basement Map. Preparation of a map in the Holbrook basinal area by Ed Koester showing depth to basement rock, sea level datum and lithology is about complete. This is a preliminary investigation to determine the topography on top of the basement surface and lithology. An attempt will be made subsequently to

Activity Report
May 9, 1973
Page Two

integrate the subsurface control with that furnished by the gravity and magnetic control. The ultimate objective is to semi-isolate anomalies possibly offering unconformity or structural traps for petroleum accumulations in the sediments overlying the basement rocks.

* * * *

A recent request for one of our publications indicates that Dames & Moore, a consulting engineering firm in Los Angeles, is preparing a report on the geology and seismology of the area around Holbrook, Arizona, for an unnamed client.

INDUSTRY INTEREST IN ENERGY AND OTHER RESOURCES

Mobil Oil Company, based on requests for well samples and oral communications, has recently increased its subsurface investigative efforts in the Basin and Range Province.

* * * *

William R. Beardsley, a semi-retired oil geologist, Sun City, has expressed an interest in the oil potentialities of northwestern Arizona and southwestern Utah.

* * * *

Edmonds and Peters, operators of a recent wildcat hole in Gila County, report that they plan to drill another well in Section 24, T5N, R17E, about 1-1/4 miles northwest of the first test well.

* * * *

Several persons at the recent A.I.M.E. meeting in Phoenix requested and received some of our publications and maps. Among them: Paul Laird, Century Geophysical Corporation; David N. Skillings, Skillings Mining Review, Duluth Minnesota; Warren M. Woodward, exploration consultant, Reno, Nevada; and Carl W. Appelin, Atomic Energy Commission, Grand Junction, Colorado.

* * * *

A geologist with Bechtol Power Corporation, Los Angeles, visited our office recently. He was primarily interested in Arizona's salt masses.

Activity Report
May 9, 1973
Page Three

U. S. GEOLOGICAL SURVEY

In response to an inquiry by Ed Koester, George W. Walker, Chief, Branch of Western Mineral Resources, furnished us a brief report on the Survey's current and planned work in Arizona. Several geologists this spring have been mapping and compiling data on the distribution of mineral resources in the Phoenix-Tucson region as they relate to several major groupings of rock units. Insofar as practical, all mineral resource data used in the preparation of 2-degree topographic quadrangles (Nogales, Tucson, Mesa and Phoenix) is to be computerized so as to make them usable for land and other uses.

GENERAL

Energy Problems. Two representatives of the Salt River Project (S.R.P.) presented a paper to members of the Petroleum Development Association and numerous guests at a luncheon May 8th. The speakers had numerous slides showing present and future power requirements, generation plants under construction, safeguards to protect the environment, and "tie-ins" with out-of-state power companies. In view of present shortage of natural gas, and future probable banned use of this clean fuel for generation of electricity, the State's power companies are switching to distillate or residual oil for plants equipped to use such fuels. Salt River Project is experiencing difficulty in purchasing distillate or residual oil from their customary suppliers on the West Coast. For the coal-fired plants, low-sulfur coal will be shipped in from Colorado or Wyoming. Haulage costs will necessitate higher prices for consumers.

The speakers expressed confidence that S.R.P. would be able to supply power for current and future requirements. One of the guests, Jefferson Davis, Times-Picayune newspaper, New Orleans, Louisiana, questioned this statement. The two leading petroleum-productive states in the country, Texas and Louisiana, are having difficulty in supplying sufficient fuel for users in their own states.

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Navajo Tribe. The Navajos have hired a hydrologist, a graduate student from N.A.U. He examined some well samples here in our office recently. His master's thesis will be on the stratigraphy of the Mississippian System roughly in the area from Grand Canyon to the LaPlata Mountains in southwestern Colorado. This thesis, and others in progress by N.A.U. graduate students, will furnish information of value to this Commission.

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Activity Report
May 9, 1973
Page Four

Educational Item. This past month the Commission staff assisted a teacher and students of Phoenix Christian High School in furnishing material for a debate on the energy crisis.


J. N. C.

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