

OIL & GAS CONSERVATION COMMISSION  
Meeting: October 18, 1974  
Mr. John Bannister, Exec. Sec.

UNIVERSITY OF ARIZONA  
PRINCIPLES OF REMOTE SENSING  
A SHORT COURSE

RECEIVED

OCT 16 1974

D & G CONS. COMM.

Geared to the basic understanding of remote sensing principles. Topics to be covered include the nature and transfer of energy, electromagnetic radiation, types of aerial photographs, cameras, film, basic photo interpretation, the ERTS system, and data enhancement. This course is intended to give the busy administrator an opportunity to gain exposure to a new technique currently in use for the inventory of many of our resources.

For persons interested in learning the basic principles of remote sensing.

WHEN: Thursday 8:30 a.m. - 5:00 p.m. December 5, 1974  
Friday 8:00 a.m. - 12:00 p.m. December 6, 1974

WHERE: Remote Sensing Laboratory, Room 334, Geology Building,  
University of Arizona, Campus

REGISTRATION & FEES: An enrollment for \$50.00 will include a text, miscellaneous handouts, and ERTS data products. Enrollment limit 20 persons.

STAFF: Dr. K. Foster, OALS  
Dr. David Moaut, OALS  
Mr. John S. Vuich, Arizona Bureau of Mines  
Dr. G. Davis, Geosciences  
Dr. W. Rasmussen, Agriculture

HOUSING: Arrangements have been made at the Flamingo Hotel (1300 N. Stone Avenue, 9 blocks from campus) and the Plaza International (1900 E. Speedway, 3 blocks from campus) to give participants special rates.

MEALS: Thursday noon will be on campus in the Student Union. The group is invited to the home of Dr. Edgar McCullough Thursday night for a hamburger fry.

For additional enrollment information contact: Dr. Edgar J. McCullough  
University of Arizona  
Tucson, Arizona  
(602)884-1335

AGENDA

THURSDAY, DECEMBER 5, 1974

8:30 - 12:00

TOPICS

The Nature of Energy - Kinetic, Potential  
The Transfer of Energy - Conduction, Convection, Radiation  
Nature of Electromagnetic Radiation - Wave Model, Particle Theory  
The Spectrum and its Regions - Ultraviolet, Visible, Infrared, Microwave  
Atmospheric Effects on Radiation - Scatter, Absorption, Refraction  
Target Interaction - Reflection, Absorption, Transmission  
The Visible Spectrum - Windows

12:00 - 1:00 LUNCH

1:00 - 5:00

TOPICS

Types of Aerial Photographs - Vertical, Oblique  
Specifications of Aerial photographs - Camera, Lens, Focal length, Scale,  
Ground coverage, Ground resolution, Geometry, Season of photography  
Types of film - Black and white, Color, Color infrared, Multiband  
Forms of aerial photographs - Paper prints, Ratioed prints, Rectified  
prints, Positive transparencies, Enlargements, Mosaics, Orthophoto  
quads

FRIDAY, DECEMBER 6, 1974

8:00 - 12:00

TOPICS

Elements of photo interpretation - Shape, Size, Tone, Shadow, Pattern,  
Texture, Site, Association, Resolution  
ERTS System - Principle of operation, Multibands, Photographic products,  
Digital products  
Data Enhancement Demonstration - Color additive viewer, Density slicer

IN THE SUPREME COURT OF THE STATE OF ARIZONA  
In Banc

*JB*

FARMERS INVESTMENT COMPANY,  
a corporation,

Petitioner,

v.

PIMA MINING COMPANY, a corporation;  
ANDREW L. BETTWEY, State Land  
Commissioner; STATE LAND DEPARTMENT;  
THE HONORABLE ROBERT O. ROYLSTON,  
Judge of the Pima County Superior  
Court; and THE PIMA COUNTY SUPERIOR  
COURT,

Respondents.

No. 11439

**FILED**  
JUN 19 1974  
CLIFFORD H. WARD  
CLERK SUPREME COURT  
BY

SPECIAL ACTION

Prayer for Relief Granted

Snell & Wilmer  
by Mark Wilmer  
Loren W. Counce, Jr.

Phoenix

Attorneys for Petitioner

Verity & Smith  
by John C. Lacy

Tucson

Musick, Peeler & Garrett  
by Bruce A. Bevan, Jr.

Los Angeles  
California

Attorneys for Respondent  
Pima Mining Company

Gary K. Nelson  
The Attorney General  
by Peter C. Gulatto  
Assistant Attorney General

Phoenix

Attorneys for Respondents  
Andrew L. Bettwy and  
State Land Department

STRUCKMEYER, Justice

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STRUCKMEYER, Justice

Petitioner, Farmers Investment Company, brought this special action to review a ruling of the Superior Court granting respondent Pima Mining Company's motion for summary judgment and denying its motion for partial summary judgment. We accepted jurisdiction pursuant to Article 6, § 5, subsec. 4, of the Constitution of Arizona to resolve the question whether a lease from the State Land Department to Pima Mining Company is void as contrary to those provisions of Arizona's Constitution and Enabling Act requiring the leasing of certain public lands at public auction.

The following facts are material to the determination of this action. On October 24, 1966, the State Land Department of the State of Arizona executed a 10-year lease herein designated as Lease No. 906, whereby 319 acres within the Sahuarita-Continental Critical Groundwater Area were leased to the Pima Mining Company. Farmers Investment owns and farms approximately 7,000 acres within the Critical Groundwater Area of the asserted value of fifty million dollars. A substantial part of its acreage is contiguous to or near the leased lands. It has a right in the waters percolating beneath the soil, which is common to all the overlying landowners within the groundwater area. State ex rel. Morrison v. Anway, 87 Ariz. 206, 349 P.2d 774 (1960). A critical groundwater area is a groundwater basin not having sufficient ground water to provide a reasonably safe supply at the current rates of withdrawal so that the addition of other users must necessarily deplete the supply of existing users. Jarvis v. State Land Dept. and City of Tucson, 106 Ariz. 506, 479 P.2d 169 (1970).

The lease by its terms provides that the Pima Mining Company will pay \$10.00 per year "or one cent per 1,000 gallons of water removed, whichever is greater." Pima Mining Company drilled four wells on the demised lands and installed pumps and caused the water obtained thereby to be transported for use in connection with its mining and milling of copper ores. In 1972, Pima Mining Company pumped 3,163,842,000 gallons of water from beneath the land covered by Lease No. 906. The leased lands were acquired by the State of Arizona under its Enabling Act by grant from the United States Government and are approximately two miles inside the Critical Groundwater Area and seven miles from Pima Mining Company's mining and milling facilities.

Section 28 of Arizona's Enabling Act, 36 U.S. Stat. 557, 568-579, Act of June 1910, provides that the lands acquired pursuant thereto shall be held in trust by the State to be disposed of only in the manner as provided by the Act. We quote the relevant provisions of the Act:

"Said lands shall not be sold or leased, in whole or in part, except to the highest and best bidder at a public auction \* \* \*.

\* \* \* \* \*

\* \* \* nor shall any sale or contract for the sale of any timber or other natural product of such lands be made, save at the place, in the manner, and after notice by publication provided for sales and leases of the lands themselves.

\* \* \* \* \*

All lands, leaseholds, timber and other products of land, before being offered shall be appraised at their true value, and no sale or other disposal thereof shall be made for a consideration less than the value so ascertained, \* \* \*." (Emphasis added)

And:

"Every sale, lease, conveyance, or contract of or concerning any of the lands hereby granted or confirmed, or the use thereof or the natural products thereof, not made in substantial conformity with the provisions of this Act shall be null and void, any provisions of the constitution or laws of the said State to the contrary notwithstanding. \* \* \*." (Emphasis added)

The Arizona Constitution provides by Article 10, § 1, that all lands transferred to the State under the provisions of the Enabling Act shall be held in trust to be disposed of only in the manner as is provided in the Enabling Act and the Constitution of Arizona. It also repeats in §§ 3 and 8 of Article 10 all of the foregoing prohibitions and injunctions.

In 1915, in similar language to what is now A.R.S. § 37-481, the Legislature provided:

"The state land department shall conserve, sell or otherwise administer the timber products, stone, gravel, and other products and property upon lands belonging to the state under rules and regulations not in conflict with the enabling act and the constitution \* \* \*." A.R.S. § 37-481. (Emphasis added)

We first observe that there is no contention that the lease under attack is a mineral lease. Minerals are expressly excepted in § 28 and are subject to disposition as provided by the Legislature of the State. See A.R.S. § 27-231, et seq.

Pima Mining Company argues that this is a "commercial" lease which is exempt from the prohibitory provisions of the Enabling Act. This argument is predicated upon the amendment of § 28 by Congress on June 2, 1951, 65 Stat. 51. The amendment reads in its relevant part:

"Nothing herein contained shall prevent:  
1) the leasing of any of the lands referred to in this section, in such manner as the Legislature of the State of Arizona may prescribe, for grazing, agricultural, commercial and homesite purposes, for a term of ten years or less; \* \* \*."

However, the entitlement of this lease as a "commercial" lease does not add anything to the legal position of the parties. The real purpose and effect of a transaction determines its true character, *Hervey v. Rhode Island Locomotive Works*, 93 U.S. 664, 23 L.Ed. 1003 (1877), and the character of a contract must be determined by its provisions rather than its label, *Employers Liability Assurance Corp. v. Lunt*, 82 Ariz. 320, 313 P.2d 393 (1957). The instrument, while entitled "commercial" lease, is plainly and obviously a vehicle by which the State Land Department sells for one cent per 1,000 gallons any water removed from the lands demised.

This language of Congress used in § 28 of the Enabling Act does not permit the exclusion of water from the term "product of the land":

"Disposition of any of said lands, or of any money or thing of value directly or indirectly derived therefrom \* \* \* contrary to the provisions of this Act shall be deemed a breach of trust." (Emphasis added)

Water is a thing of value directly derived from the land to be considered as a product of the land within the meaning of the Constitution and Enabling Act.

We hold that the most cursory reading of the Enabling Act and Constitution compels the conclusion that water beneath the soil is a product of the land. As such, it must be sold to the highest and best bidder at public auction in the same manner as

timber, stone and gravel. State Land Department v. Tucson Rock and Sand Co., 107 Ariz. 74, 481 P.2d 867 (1971).

Petitioner presented two questions of asserted public importance justifying the intervention of this Court. As stated, we accepted jurisdiction to resolve only the question as to whether State Land Department Lease No. 906 to Pima Mining Company was void as contrary to the provisions of the Constitution and Enabling Act. We considered that the question pertaining to whether the State Land Department or the State Land Commissioner could lease lands within a critical groundwater area upon which to sink wells and pump water for use outside the area cannot be resolved at this time in the light of Pima Mining Company's affirmative defenses. We express no opinion as to whether the doctrine of reasonable use must be applied to Pima Mining Company's withdrawal of water from the lands the subject matter of Lease 906. We also express no opinion at this time as to the validity of the State Land Department's Leases Nos. 907-01 and 907-02.

We expressly hold that the State Land Department Lease No. 906, being in violation of the Arizona Constitution and the Act of Congress as expressed in Arizona's Enabling Act is null and void. The orders of the Superior Court of Pima County granting respondent Pima Mining Company's motion for summary judgment and denying petitioner's motion for partial summary judgment

are ordered vacated and set aside.

FRED C. STRUCKMEYER, JR., Justice

CONCURRING:

JACK D. H. HAYS, Chief Justice

JAMES DUKE CAMERON, Vice Chief Justice

LORNA E. LOCKWOOD, Justice

WILLIAM A. HOLOHAN, Justice



OFFICE OF

**Oil and Gas Conservation Commission**

STATE OF ARIZONA

4515 NORTH 7TH AVE.

PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

A G E N D A

Meeting  
October 18, 1974  
4515 N. 7th Avenue, Phoenix, Arizona

Call to Order

10:00 a.m.

1. Approval of minutes of meeting of September 17, 1974
2. Report of Executive Secretary
3. Report of Enforcement Section
4. Report of Geology Section
5. Old Business
6. New Business - *SPAA - Wallace*
8. Adjourn *10-27-74*

*GEO THERMAL PROGRAM ?*

*12-5-76  
24 Remote sensing  
Sol Tucson*

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

PHONE: (602) 271-5161

October 9, 1974

Memo: Commissioners  
From: John Bannister

I attended the Executive Committee Session of the Interstate Oil Compact Commission in Washington, D.C. on September 19th and 20th. The purpose of the meeting was to firm up plans for the December meeting of the IOCC in Phoenix and to have a chance to talk informally with Mr. John Sawhill of the Federal Energy Office and members of the various congressional delegations. Mr. Fred Alderson of Representative Sam Steiger's office joined me on Thursday evening and we were able to discuss many of the effects of various energy policies in Arizona and other energy producing states. It was the feeling that this meeting in Washington was most productive and in all likelihood future meetings of the Executive Committee will be held in Washington, D.C.

The geothermal symposium was held in Pasadena, California the following week from September 23 to 25. Jack Conley and I had been authorized to attend this meeting; unfortunately Jack became ill and had to cancel plans to attend. This meeting was a particularly busy one, with papers being given from 8 until 12 and from 1 until 5 each day. Various federal agencies such as BLM, National Science Foundation, the Federal Energy Office and others spoke to the assembly and, in general, the audience was unreceptive to their information. The prime reason for this was that the agencies were extremely vague in plans, particularly concerning expenditures of rather vast sums of money which have been allotted to the various agencies for development of energy forms and, in some cases, specifically geothermal energy.

As an example, the National Science Foundation had been allotted \$23 million for expenditure between July 1, 1974 and June 30, 1975. They refused to say what plans are being considered for expenditure of the money, how much money is committed to date and how much money is available. In response to questions

Memo: Commissioners  
October 9, 1974  
Page Two

as to whether industry or private individuals could submit suggestions, the answer was "yes" but all indications are that it would be an exercise in futility, inasmuch as the money had already been pretty well earmarked. Some explanation was given as to future conferences to be held by several of the agencies and questions were asked as to how we will receive notice of these meetings so we may attend. The broad and general answer was "the ones we want will be invited, no notice will be given to others".

Some technical papers were given concerning specific problems in various fields, such as the Geysers in California, the Wairakei in New Zealand and Ciera Prieta in New Mexico.

I was asked many times when Arizona was going to hold its promised state geothermal lease sale and, of course, was unable to give any answer. I found out that it was sort of a joke among the geothermal explorers attending the conference.

Again, attendance at this conference was of benefit to our State, both from the standpoint of information received as well as giving Arizona further exposure to the geothermal industry. I urge attendance at these meetings as frequently as time and money permit.

Mr. A. K. Doss of the State Land Department contacted me by phone on October 7th. He informed me that he had talked to the Attorney General, whom he claimed had been holding up geothermal lease sales by not having approved the state leasing form. Mr. Doss informed me that the Attorney General's office had said that he could not approve leasing of geothermal energy inasmuch as, in his opinion, geothermal energy is nothing but ground water which must be sold on competitive bid. He further informed Mr. Doss that he had been unable to find any legal authority in western states holding anything to the contrary. Mr. Doss asked for any help we are able to give and I am at this time seeing what legal authority and definitions we can find in our surrounding states. I will keep you informed as to developments in this area. Needless to say, failure of the State to issue leases for geothermal energy will be a set-back, particularly in view of the fact that it is most difficult to put together a block of leases without being able to lease State lands.

An interesting development is manifesting itself in the State. As near as I can determine, there is now at least one company actively purchasing waste motor oil from the various service stations and other major utilities. This oil is apparently being put into holding tanks and allowing waste matters to

settle out. The oil is then taken from the top through screens and sold as a burner fuel. Apparently some million and a half gallons of fuel are "recycled" monthly. It is my understanding that much of the waste oil is picked up by the company free of charge for just getting the waste product off the premises of the service stations while, in some cases, the company pays up to 7¢ per gallon for this. I understand that after the oil is settled out it is being sold for approximately 18¢ a gallon which, of course, represents a nice savings to the purchasing company over the cost of most burner fuels.

I am attaching copy of an article entitled "A Matter of Concern" from the July, 1974 Executive Report. This is an excellent presentation of why geological information developed by individuals should remain a proprietary property. I have heard no real complaint over Arizona's period of confidentiality, however I would mention much of the geology mentioned in the article is not information to which this Commission feels itself privy.

There has been some breakdown in negotiations with Eastern Petroleum Company concerning plugging of wells in the Navajo Springs area. I will discuss this with you more fully at the meeting. It is now my feeling that it will be advisable to call a show cause hearing in conjunction with our November meeting unless plugging operations should be started prior to this time.



# EXECUTIVE REPORT

A NEWSLETTER TO ALL MEMBERS

Merrill W. Hines, Editor

Vol. V -- No. 1

July, 1974

## A MATTER OF CONCERN

In our society, it has always been considered the fundamental right of creative individuals to control the destiny of their work. A serious threat to the petroleum geologist's control of the use of the products of his creative labors is posed by department of the interior proposals to amend the regulations covering disclosure of geological and geophysical information on federal leases offshore.

Regulations now in effect require offshore operators to release much of their basic, uninterpreted data to governmental agencies. The proposed amendments would require, in addition, the release of interpretations of that data made by geologists and geophysicists. We feel that this would be an infringement on the individual rights of these scientists. A significant number of AAPG members, both corporate and independent, have appealed to the Executive Committee to take a firm stand in opposition to these proposals. As a consequence, the Committee has directed me to prepare a statement and present it, as your President, at the hearing to be held in Washington on July 15. I have done this and would like to extract some of it for you here.

It is maintained in the proposal that the changes would (1) serve the public interest, (2) conserve natural resources, (3) encourage competitive bidding, and (4) assure the receipt of a fair market value for federal resources. Somewhat condensed testimony to each of these stated objectives is as follows:

Serve the public interest -- It is the experience of this Association of professional explorationists that our free-enterprise system has operated in a manner that has established the worldwide standard for efficient and effective exploration. Under this system, individual interests develop new technology and information which is not disclosed to other private or public interests but is retained for their own proprietary use. This system has served the public interest well. The dominant position of the U. S. oil industry in foreign exploration is largely due to the continuously improving exploration technology developed domestically. The motivation to continue this type of technological improvement should not be destroyed by disclosure rules that provide equal information to other private or public interests. Disclosure of well data to the public 60 days after completion will retard the drilling of wells adjacent to open acreage. This is incompatible with the goals of project independence and not in the public interest.

Conserve natural resources -- Disclosure of geologic and geophysical information, as proposed, will retard discovery of resources but not conserve known resources. Conservation of resources will best be accomplished by allowing market forces to play their proper role in the balancing of demand and supply for oil and natural gas.

Encourage competitive bidding -- The record shows that OCS sales are already intensely competitive. A steady growth has taken place in both the number of bidders and those acquiring acreage. At the 1960 sale, 32 companies entered bids and 29 acquired leasehold interests. Fourteen years later, the number of participants in OCS sales increased to 61, and 57 acquired leasehold interests. Competition is also clearly indicated by the overbids. In the last seven offshore sales in the Gulf of Mexico, the overbids totaled \$4.2 billion, more than 40% of the total money spent. Only in an intensely competitive bidding environment would one expect such results. This kind of record raises serious questions about the basic need for any change in disclosure of information to "encourage competitive bidding."

Assure the receipt of a fair market value for Federal resources -- Sales of leases by competitive sealed bid assure top value. The wide range of bids of any one tract reflects the different assessments of tract value by individual operators. The U. S. G. S. and the B. L. M. develop assessments of resource potential using methods similar to those employed by private operators. Thus, the government assessment of the worth of an individual tract has the same high level of uncertainty as do estimates made by private operators. Therefore, the U. S. G. S. and B. L. M. single assessment of worth is no more likely to accurately represent a true indication of the actual worth of a tract than does the assessment made by any single competent private operator selected at random. It follows, therefore, that the government assessment is a poor measurement for the purpose of determining whether the high bid represents adequate compensation to the public.

Our prognosis of the effects on exploration on federal lands, both offshore and onshore, is covered as follows:

A geological interpretation is a working hypothesis displayed on a map and remains so until tested by the drill. It should be valued and protected as a copyrighted document -- not to be taken away and distributed to those who request it. "Oil is found in the minds of men," and it is an infringement on individual rights to force the disclosure of private ideas. As professional geologists, we gain a livelihood by generating ideas and recording them in a workable and comprehensive form. These recorded ideas belong to those who have paid for them.

If regulations are changed to require disclosure of more information on Federal leases offshore, the next logical step will be to require the release of all data on Federal onshore leases. This, too, will involve a large number of our members who are involved directly as independent operators and consultants in the onshore exploration effort. The direction being proposed in this hearing would be very detrimental to this large group of oil finders who constitute an important segment of the petroleum industry.

These proposed disclosure rules are particularly disturbing at this time. The industry has been providing a tremendous quantity of factual, confidential information to Interior, U. S. G. S., and B. L. M., and the nation's very large offshore operation has been carried out in a highly successful manner. This Association has always reviewed the U. S. G. S. and B. L. M. as independent professionally competent organizations that have not been diverted by political pressures of the moment. We sincerely hope that they will not yield to the obvious political pressures at this time.

The A. A. P. G. opposes the changes in regulations which require the disclosure of more geologic and geophysical information to the geological survey and to the public.

*Merrill W. Hines*



OFFICE OF

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STATE OF ARIZONA

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PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

ACTIVITY REPORT

October 9, 1974

Memo from W. E. Allen, Director  
Enforcement Section

Several times recently during our regular meetings I have briefly discussed the desirability of forcing Eastern Petroleum Company to plug a number of their non-productive wells in the Navajo Springs area. On our next regular meeting date I will be attending a geothermal short course in Boise, Idaho so I will take this opportunity to again discuss this situation.

Eastern Petroleum has filed applications to abandon and plug a total of 13 wells in this general area. None of the 13 wells are in the Navajo Springs Coconino Unit and only three of the 13 have ever produced. The production from these three total 31,365 MCF of raw gas. All three of these producers were shut-in prior to the shutdown of Western Helium's extraction plant.

Since Eastern has submitted applications to plug 13 of their wells, it would appear that they were complying with our request, however Eastern now tells me that the contractor that had been engaged to perform this work had backed down. The reason being that he feared possible legal complications from Eastern's partners and also from the surface owners or lessees. From my past experience with Eastern, I have reservations as to the validity of Eastern's excuse to delay the plugging of these wells. This operator, according to our records, has a total of 26 unplugged wells in the Navajo Springs area. Some time in the future all of these wells must be plugged. This operator has a blanket bond in the amount of \$25,000 to insure compliance with the rules and regulations of the Commission. In my opinion should it be necessary to go against this bond in order to plug these wells, the total amount would be inadequate to properly plug all wells, restore locations to

W. E. Allen  
Activity Report  
10-9-74

original condition and to perform other tasks required by our rules and regulations. This is the main reason I have been insisting that Eastern step in now and plug their wells that are apparently incapable of production. If this Commission can force Eastern to plug these non-producers now and with their own funds, it will greatly reduce the possibility of the State of Arizona having to appropriate funds to plug these wells in the future. It is my recommendation that the Commission hold a formal hearing on this matter in the near future. It would be hoped that this hearing would result in the Commission issuing an order to have these non-productive wells plugged.

A tabulation of wells operated by Eastern is attached. Mr. Bannister will answer any questions that you have regarding this tabulation or any of my above remarks or observations.

Duval Corporation has been issued a total of five permits for the drilling of stratigraphic mineral tests in the general area of Navajo Springs. Three of these tests have been completed and the holes plugged. The fourth test is presently being drilled. The operator should complete this test within the week and presumably start drilling their fifth hole.

Fee Oil & Gas Ltd. have not spudded their Mississippian test located in the SE/NW Section 16-T40N-R28E, Apache County. It is my understanding that they will start this test as quickly as a rig is available.

KCM Company will not start their deep test located in the NE/NE Section 16-T22S-R31E, Cochise County until February 1975. The availability of pipe is the cause of this delay.

We have had no recent information concerning the exploration plans of Webb Resources or Morton Bros. on the acreage they have in the Holbrook--Snowflake area.



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ACTIVITY REPORT

October 9, 1974

J. N. Conley  
Director, Geology Section

**PUBLICATIONS**

Our new and expanded Directory - Sources of Information on Exploration for Petroleum and Geothermal Resources in the State of Arizona, Pinta Dome-Navajo Springs-East Navajo Springs, and Dineh-bi-Keyah pool maps have not yet been printed. The State printing office has had labor problems.

As mentioned last month, we found some very serious elevation discrepancies between those determined by the U. S. Geological Survey and those reported by the operators for many wells in the Pinta Dome-Navajo Springs-East Navajo Springs helium pools. These discrepancies were brought to the attention of the Topographic Division of the U. S. Geological Survey. The Survey has re-checked 45 of the wells and has notified us that it can find no reason to doubt the accuracy of the well elevations shown on the Navajo South and Navajo Springs topographic quadrangles. Also, it is evident that some operators did not drill wells at the permitted locations. Resolution of some of these elevation and location problems will delay completion of Special Publication 2.

\*\*\*\*\*

Considerable progress has been made in the preparation of a special report on the Dineh-bi-Keyah oil field and of a well location map covering Apache, Coconino, and Apache Counties, and most of Gila County. When this particular map is finished, we will have well location maps at a scale of 1:500,000 covering the entire State.

Publication Sales and Distribution. Since September 6, 1974, we have sold 120 of our publications; total cash receipts, \$189.45. Most of the sales have been to such companies as: Superior Oil, American Smelting, Cities Service, and El Paso Natural Gas. We continue to receive numerous requests from governmental and state agencies and from academia libraries.

**INVESTIGATIVE PROJECTS**

U. S. Geological Survey Programs. In my April 10, 1974, Activity Report, I listed the approximate budgets of the Survey for research investigations for FY75, including \$9.4 million for geothermal and \$5 million for oil and gas resources. Survey personnel informed me that some money grants might be available to academia

Activity Report  
October 9, 1974  
Page 2

and state agencies for energy resource investigations. I therefore promptly submitted to the Survey the various approved investigations proposals received from our three leading universities in response to Governor Williams' request for a State investigative program. Until this week, the only response from the Survey was a letter stating, "We will be happy to consider your projects ... both in terms of cooperation and funds for state performance."

The Survey has now established an "extra-mural" set-up (not yet announced officially) to consider funding on a contract basis academia and state agency energy investigative projects. This Commission has been contacted relative to two of the geothermal projects submitted: one by Dr. Brumbaugh, Northern Arizona University; and the other by Dr. Buseck, Arizona State University. Brumbaugh and Buseck will re-submit their respective proposals directly to the Survey. The manager of the "extra-mural" program, at my request, has informed me that he will review the other submitted programs.

Structure Mapping, Northern Arizona. Dr. George Davis, principal investigator of this NASA-funded ERTS imagery and surface mapping project, reports that the project has been expanded and will not be completed until sometime in November. The grant funds have been expended. Davis and a graduate student are continuing the investigation without financial assistance.

Subsurface Investigation, Northern Arizona. Two graduate students at Northern Arizona University are continuing their investigations of the Mississippian and Devonian Systems at their own expense. They recently visited this office to obtain more drill bit cuttings of critical wells. As Dr. Cotera reported at the last Commission meeting, some financial assistance from the U. S. Geological Survey may be forthcoming to better support this project, which this Commission also recommended directly to the Survey.

Heat Flow Studies in Arizona. As previously reported this Commission has furnished drill bit cuttings and other information to Dr. Marshall Reiter, Department of Science, The College, New Mexico Institute of Mining & Technology, Socorro, New Mexico, in connection with heat flow studies in the eastern portion of the Colorado Plateau province in Northern Arizona. We recently received a request for more drill bit cuttings. The investigative group hopes to expand their studies to include an area in Graham and Greenlee Counties. This area would encompass Whitlock Valley in Graham County, where our State Land Department plans to put up a block of geothermal leases for competitive bidding.

#### LEASING & EXPLORATION

We have heard rumors that a heavy lease play has been underway for some time in southwestern McKinley County and northwestern Valencia County, New Mexico. This area is adjacent to the northeastern portion of the "Holbrook Basin" in Apache County, Arizona. According to the Southwestern Oil & Gas News, September 28, 1974, a not too reliable trade journal, such a play has been made.

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Dr. William Sauck, Arizona State University, according to the Scottsdale Daily Journal, September 20, 1974, and the Phoenix Gazette, September 25, 1974, is utilizing seismic equipment developed by Gresham Geophysical Corporation of Phoenix in making crustal seismic refraction studies by recording large mine blasts from varying distances and in monitoring largely man-made sounds at such sites as the Desert Botanical Gardens, Roosevelt Lake vicinity, and the Maricopa County Civil Defense Installation. G. R. T. Clacy, president and chief geophysicist of the Gresham company, developed the seismic equipment as an exploratory tool for geothermal resources.

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**MONTHLY FINANCIAL REPORT**

1 RECEIPTS MONTH OF <i>Sept 19 74</i>	2 CLASSIFICATION	3 RECEIPTS	4 APPROPRIATED RECEIPTS	4 UNAPPROPRIATED RECEIPTS	5 TOTAL ALL RECEIPTS YEAR TO DATE
75 00	1 Permits to Drill			75 00	150 00
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
75 00	TOTAL CURRENT MONTH RECEIPTS			75 00	XXXXXXXX
XXXXXX	TRANSFERS IN				
75 00	BALANCES BROUGHT FORWARD			3,351 83	XXXXXXXX
	TOTALS - MONTH AND YEAR TO DATE			3,426 83	3,426 83

6 CLAIMS PAID MONTH OF <i>Sept 19 74</i>	7 EXPENDITURES FUND TITLES	8 TOTAL AMOUNT AVAILABLE YEAR TO DATE	9 CLAIMS PAID YEAR TO DATE	10 OUTSTANDING ENCUMBRANCES	11 UNENCUMBERED BALANCE
8,727 72	1 Personal Services	31,348 00	23,633 75		7,714 25
1,063 65	2 Emp. Related Exp.	4,090 00	2,971 32		1,118 68
147 00	3 Professional Serv	1,385 85	408 00		977 85
800 46	4 Travel-State	2,475 00	1,702 29	715 97	567 74
679 49	5 Travel-Out of State	3,200 00	1,281 30	837 33	1,081 37
2,794 18	6 Other Operating Exp.	25,615 55	10,988 32	13,768 70	858 53
	7 Capital Outlay-Equip.	4,100 00	3,722 83		377 17
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
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	25				
	26				
	27				
	28				
	29				
	30				
13,612 50	TOTALS	72,214 40	44,707 81	15,322 00	12,184 59

1	2	3	4
CLAIMS PAID YEAR TO DATE	OBJECT CODE NO.	DISTRIBUTION OF EXPENDITURES CLASSIFICATION	CLAIMS PAID MONTH OF <i>Sept. 19 77</i>
210.00	7111	1 Per Diem: Commission Members	1 210.00
23,423.75	7112	2 Salaries: Employees	2 8,517.72
	7151	3 Industrial Insurance	3
1,326.70	7153	4 F.I.C.A.	4
1,344.62	7155	5 Retirement	5 754.69
300.00	7156	6 Health Insurance	6 488.96
	7159	7 Personnel Commission	7 120.00
		8	8
	7215	9 Professional Services: Engineer	9
408.00	7219	10 Professional Services: Other	10 147.00
		11	11
402.30	7221	12 Travel - State: Mileage	12 131.70
690.50	7222	13 Subsistence	13 388.50
	7223	14 Public Transp.	14
576.69	7224	15 Vehicle Expense	15 280.16
32.80	7225	16 Reg. Fees; Parking; etc.	16 10
		17	17
343.00	7232	18 Travel - Out of State: Subsistence	18 128.00
689.65	7233	19 Public Transp.	19 443.04
1.02	7234	20 Airport Parking	20
248.65	7235	21 Reg. Fees; Telephone; etc.	21 108.45
		22	22
9,247.30	7251	23 Occupancy: Office Rent	23 1,849.46
	7261	24 Warehouse Rent	24
	7263	25 Warehouse Mtn. & Repair	25
250.00	7272	26 Mtn. & Repairs: Furn. & Equip.	26
499.46	7280	27 Office Supplies	27 136.25
137.21	7300	28 Field Supplies; Film; Am.Strat; P.I., etc.	28 20.00
32.00	7331	29 Printing: Reports; Large Maps; etc.	29 32.00
	7332	30 Legal Advertisement	30
	7333	31 Court Reporter	31
	7334	32 Postage	32
480.53	7335	33 Telephone	33 136.47
	7337	34 Drayage; Express; etc.	34
61.80	7349	35 Rental, Misc.	35
29.00	7360	36 Dues & Subscriptions	36 20.00
		37	37
189.32	7431	38 Capital Outlay: Office Equip; Tpr; etc.	38
	7434	39 Spec. Equip. (Geol.)	39
3,533.51	7436	40 Automobile	40
		41	41
250.00	7913	42 Revolving Fund	42
		43	43
		44	44
		45	45
		46	46
		47	47
		48	48
		49	49
		50	50
		51	51
		52	52
		53	53
		54	54
		55	55
44,707.81		TOTAL	13,612.50