Wyo Geo-Notes

July 1977
Vol. 1
No. 1

Wyoming Geo-Notes

The Wyoming Geological Survey News

Vol.1, No.1 July 1977

Table of Contents

Wyoming Geo-Notes is a semi-annual publication of the Wyoming Geological Survey, P.O. Box 3008, University Station, Laramie, Wyoming 82071, phone 307-742-2054. Written by Bob Monteith, typeset by Betty's Desk, printed by Modern Printing Company.

Director's Notes

This is the first in a series of newsletters by Wyoming's Gelogical Survey. It is designed to provide updates of geological activities in the state. If well received, a regular publication schedule may be established, either on a semi-annual or quarterly basis. We invite your comments to help direct us.

For those not familiar with our operation, the State Geological Survey was established by law in 1933 under the direction of Dr. S.H. Knight. Drs. H.D. (Bill) Thomas, D.L. (Don) Blackstone, Jr. and Daniel N. (Dan) Miller, Jr. have succeeded Dr. Knight.

Until September 1976, Survey personnel were housed in the S.H. Knight Geology Building at the University. A new Survey building was constructed in 1975-76 adjacent to the Geology Building.

The Survey now consists of a director, five professional geologists, one editor, two draftsmen, three secretaries and a varying number of part-time student helpers.

The Survey's work is divided into public service, special investigations and publications. The Survey's chief function is to collect, interpret and disseminate information on the geology and mineral resources of the state, with emphasis on the problems of Wyoming's communities and people.

During the 1976-78 biennium the Survey had an operational administrative budget of $584,775, and a publications budget of $55,450. In addition, the Survey has had several federal grants that help to finance cooperative investigations.

The Survey is aware of the national material problems and Wyoming's need to maintain a viable mineral industry. We are equally aware of problems from changes in the geologic regime and the community and public effects of these changes.

In this issue of the Newsletter we are attempting to introduce the members of our professional staff and provide an insight into their work with the Survey. Future editions will include information from our Minerals/Uranium section, a section currently vacant by resignation.

Coal

Co-op projects underway

Two cooperative projects highlight activity in the Survey's coal section. One, a core drilling project involving the Survey and the Conservation Division of the USGS, is designed to produce valuable information on the stratigraphy and coals in the Carbon Basin, a small structural basin south of Hanna, Wyoming.

The second project involves calculation of strippable coal reserves in the Hanna and Carbon Basins. This project is the culmination of a study funded by the U.S. Bureau of Mines.

Drilling on the Carbon Basin project will begin again shortly. It stopped early this year with the completion of three holes, ranging from 412 to 617 foot depths. Only one hole remains to be completed.

Correlation of the Basin's coal beds, which were last investigated in 1929, remains unsubstantiated. Information from these core holes may help to remedy this situation.

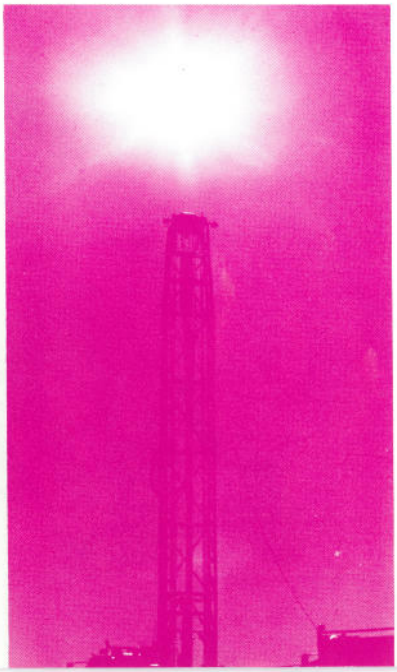
When the field study and laboratory work (samples are being analyzed by the USGS and the Bureau of Mines) are completed, analyses and detailed logs of the holes will be published.

In the Bureau of Mines project, data from drill holes and outcrops will be used to calculate strippable reserves. In this study, strippable reserves will be divided into two categories; coals under less than 100 feet of cover and coals between 100-200 feet of cover. The report, as with the USGS project, will be published sometime this year.

CAREFUL records were kept of each core from the Carbon Basin project and the results of the drilling will be published this winter. Here staff geologist Gary Glass describes one of the many samples.

THROUGH careful examination, Gary has learned much about the coals and stratigraphy of the Carbon Basin.

RISING dramatically to the sun, the core rig takes it place over the last of two holes completed in the Carbon Basin.

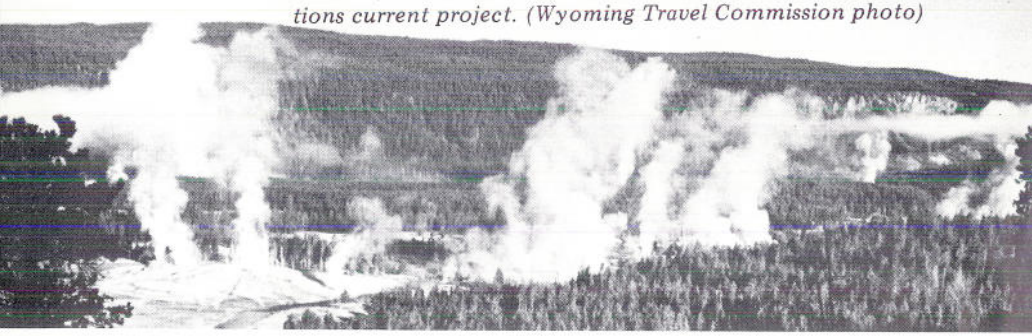


Other Projects

. . . . Currently involved in a summary of the coal deposits of the Hams Fork Coal Region in western Wyoming;
. . . . Preparing a summary of the total coal picture in Sheridan County for an upcoming County Resource Series;
. . . . Updating the Survey's comprehensive listing of coal mining operations in the state (the Wyoming Coal Directory);
. . . . Performing an ongoing program of answering public and governmental inquiries.

Environmental

OLD FAITHFUL geyser basin is one spectacular example of the earth's thermal features. A host of equally important if less spectacular features occur in Wyoming and are the crux of the sections current project. (Wyoming Travel Commission photo)



Other Projects

. . . . Carry the primary responsibility for reviewing environmental impact statements that arrive monthly. While the Survey has no regulatory authority in these areas, it does provide geological consultation for state regulatory bodies;

. . . . Recently completed a geological assessment of the Greyrocks Dam project in Platte County;

. . . . Prepare a surficial geology map of portions of the Medicine Bow Mountains in conjunction with another project involving research on Precambrian uranium conglomerates;

. . . . Compile information on water and construction materials for the Sheridan County Resource Series report;

. . . . Answer numerous inquiries from the public regarding ground water resource (geohydrology);

. . . . Work with county planners to review major new developments and installations.

AERIAL photos provide a wealth of information and are useful in a number of the section's studies. Here, a student assistant scans an infrared photo.

Thermal features form topic of section study

Wyoming's several hundred thermal springs are the topic of an ongoing project by the Survey. For the study, the thermal features have been divided into 57 systems or localities.

The study explores a number of factors relating to the features including their temperature, water chemistry, biological make-up and geographic and geologic setting.

The Survey, using newly acquired equipment, will run x-ray analyses on rock samples from the various sites to determine minerology of deposits associated with thermal areas. While with the University of Wyoming, Terry Terrel ran a biological analysis of algae from the various stream samples.

The Survey has taken an interest in the thermal springs because of their usefulness as indicators of geologic conditions at depth. Thermal waters have been used for mineral baths, space heating, irrigation and even fish farming. As the Survey's work in this field continues, more detailed analysis of their uses will become a major objective.

An initial publication on the thermal springs, a compilation of what they are, where they are, and the results of analyses on the precipitates and water samples will be published later this year. The bulletin will contain, in addition to a body of scientific material, several sections designed for the general public. Later reports will carry the results of more detailed studies.

Dr. Daniel N. (Dan) Miller, Jr.
Executive Director

Employed for 11 years in petroleum exploration, Dan also served as professor and chairman of the Geology Department at Southern Illinois University for six years before coming to the Survey in 1969.

Gary B. Glass,
Coal Geologist

Gary came to Wyoming in 1971 and brought with him a body of expertise in coal geology. He worked with the Pennsylvania Geological Survey for 10 years and spent three years in the military with the U.S. Army Corps of Engineers.

Dr. Roy M. Breckenridge,
Environmental Geologist

Joining the Survey in 1973, Roy earned his doctorate at UW. As a graduate student he worked with the UW Remote Sensing Lab and gained field experience through a number of USGS field projects.

Survey Geologists

David (Dave) Lageson,
Stratigraphy

Dave, the Survey's newest geologist, received his M.S. from the University of Wyoming this year. He worked with the Survey as a part-time assistant for one and one-half years before joining the permanent staff.

Alan VerPloeg,
Oil and Gas Geologist

Alan came to the Survey in October of 1976 from the Bureau of Land Management's Rawlins office. He had worked in the oil and gas section and served as District Geologist during his two years with the BLM.

O&G section covers broad

The oil and gas section is involved primarily with scientific investigation, information gathering, maintaining voluminous records and continual consultation with industry and the State's various governmental agencies.

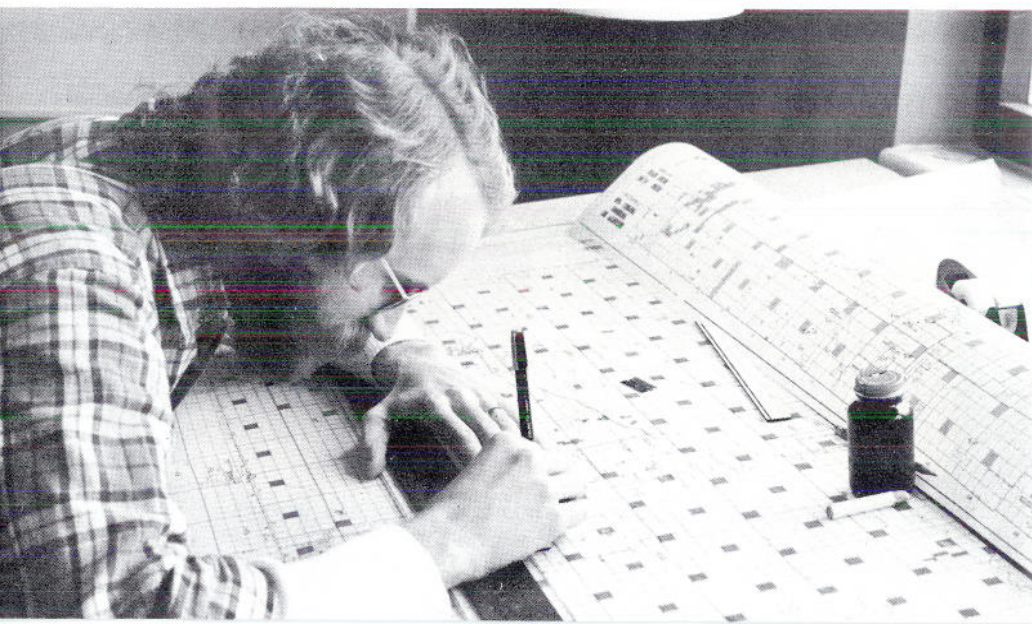
The section maintains files and maps on drilling and development activity in the State, utilizing such sources as Petroleum Information reports, industry records and POMCO maps.

Locations of wildcats and field extensions are posted weekly on regional base maps of the State. The section is responsible for notifying the State Land Commissioner's Office of oil and gas test wells drilled on or adjacent to lands owned by the State of Wyoming.

The section also maintains extensive files of well logs and other geological data, including structure and isopach maps and cross-sections of newly discovered fields.

In addition, staff geologist Alan VerPloeg answers oil and gas inquiries, com-

SPOTTING up new well sites is only one of the many duties of the O&G section but it is, indeed, a time consuming one.



piles information for the County Resource Series reports, and maintains a continual awareness of the oil and gas developments throughout the State.

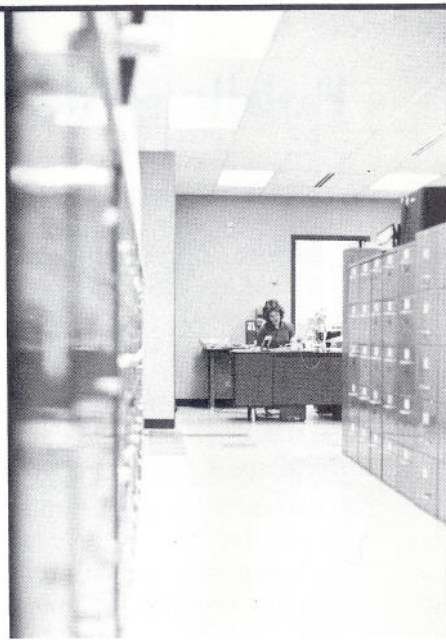
Planned projects

Two major projects are underway in the oil and gas section.

One investigation deals with the distribution and production potential of the Twin Creek Limestone in the Overthrust Belt region, with emphasis on its relation to recent oil and gas discoveries in Utah and southwest Wyoming. The project will involve petrographic as well as stratigraphic interpretation in an attempt to determine factors controlling accumulation of hydrocarbons.

The second investigation involves development of a thin section library. The proposed library will include selected thin sections of reservoir rock from key producing fields that can be used for geologic and engineering reference.

The project will consist of compiling a reservoir rock catalog of lithologic and porosity descriptions and data, including photomicrographs, with a short accompanying discussion of the petrology.



SEEMINGLY endless rows of files are necessary to house the survey's collection of well logs and other geological information. The vast field of files are the domain of staff geologist Alan VerPloeg.

Publications

Public Education plays role

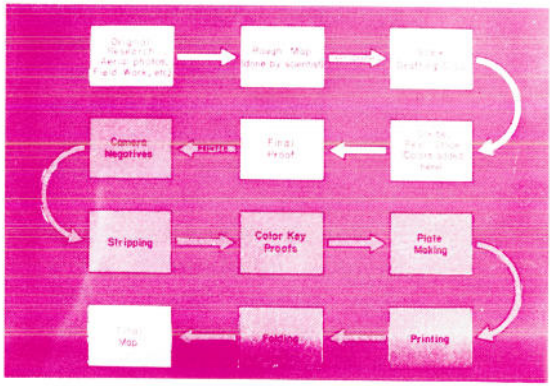
In addition to technical material, the Survey also prepares and publishes special material for the people of the State about Wyoming's mineral resources and geology.

To inform the citizenry, the Survey has for several years produced a number of free information circulars. Recently, the Survey has enlarged its public information program to include such things as public displays and public service announcements for radio.

Free circulars dealing with such topics as coal, oil and gas, and rock hunting are available upon request. These booklets are designed to present material on the State's geology and mineral resources in an easy to read, easy to understand format.

A new program, the production of three-minute public service spots for the State's radio stations, is now in an experimental stage. The programs deal with a wide range of topics from the origin of the Gangplank to coal gasification. Initial contacts with radio stations in the State indicate the programs will be well received.

Other information materials include a 20-minute slide tape presentation on map making, a teacher's guide to using the County Resource Series in the classroom, and a traveling geological display.



AS PART of our public education efforts, we produced a 15 minute slide/tape show detailing the map making process. The show includes these 12 steps.

CRS PRODUCTION requires more than merely compiling and throwing together a completed map. In one of the many steps to production a geologist fits the rough pieces of a plate into position.

New Releases

. . . . CRS-4, Geologic Map, Atlas and Summary of Land, Water and Mineral Resources of Johnson County ($3.00)
. . . . PIC-6, Source/Consultants Director for Wyoming ($1.00)
. . . . Information Circular, Oil and Gas in Wyoming (free)
. . . . Bul. 56 (Revised), Minerals and Rocks of Wyoming ($2.00)
. . . . Slide/tape presentation, Map Making (available on loan from the Survey)
. . . . Radio programs, 11 shows dealing with Wyoming geology (duplicate tapes available for $5.00)

CRS provides broad county view

With the completion of County Resource Series 4 covering Johnson County, the Survey has produced single concept maps and summaries dealing with the geology, land, water, mineral and other resources of four Wyoming counties: Converse, Campbell, Sweetwater and Johnson.

The series is designed to provide a broad overview of the county which will be useful to a broad range of people, ranging from geologists to county commissioners.

Each report is made up of eight or nine separate sheets. Each sheet deals with a specific topic. As an example, Johnson County has sheets dealing with ground and surface water, petroleum, vegetation, land and mineral ownership, geology, landforms, minerals, land use, and coal.

The Survey is currently completing initial work on CRS 5 covering Sheridan County. Following its publication late this winter, the project will move on to Natrona County.

Survey helps prepare for Carboniferous Congress

The stratigraphy section is participating with other state surveys and the U.S. Geological Survey in a joint project involving an up-to-date evaluation of the Carboniferous strata of the United States. The Wyoming Geological Survey will contribute a chapter on Wyoming's Carboniferous strata that will be part of a much larger U.S. Geological Survey publication.

This work is in conjunction with the official meeting of the Ninth International Congress of Carboniferous Stratigraphy and Geology to be held in Urbana, Illinois from May 21 through 25, 1979. Seven pre-meeting and eight post-meeting field trips are planned, including a seven-day trip to the northern Rocky Mountain region. The Wyoming Survey will work with the U.S. Geological Survey on this particular field trip.

The International Congress of Carboniferous Stratigraphy and Geology is an important event to geologists throughout the world. The last meeting (1975) was held in Moscow, Russia, and including approximately 940 geologists from several countries. The Carboniferous Congress stems from a long tradition of Carboniferous meetings which were begun with the Heerlen Congress in the Netherlands in 1927.

The Ninth International Congress meeting is an important opportunity for Wyoming's Survey to contribute a state-of-the-art report on Wyoming's Mississippian and Pennsylvanian sedimentary rocks. The report will summarize current thinking in terms of depositional environments and biostratigraphy of such important formations as the Madison Limestone, Amsden Formation and Tensleep Formation.

Correlative formations will also be discussed.

Survey creates new section

Early this year the Survey added the position of Staff Stratigrapher in an attempt to expedite the handling and cataloging of information on the State's 27,000+ feet of sedimentary rocks.

Eventually, the Survey hopes to develop a stratigraphic information section capable of providing complete physical and chemical data as well as lithologic descriptions, unit thicknesses, age determinations and other criteria relating to the origin and distribution of Wyoming's sedimentary rocks.

In addition, Dave Lageson, geologist in charge of the section, will act as project coordinator for the Survey's County Resource Series investigations. The section will also assist other Survey geologists and the public in finding specific stratigraphic data.

Other projects

. . . . complete Sheridan County, County Resource Series report;

. . . . initial planning on a three to four year mapping and stratigraphic project in the northern Salt River Range of the Wyoming thrust belt;

. . . . work on a joint project with Mr. Ed Maughan on the USGS dealing with the stratigraphy of the west flank of the Sierra Madre Mountains of southern Wyoming; results should be published by early 1978;

. . . . update and revise regional cross-sections and correlation charts of Wyoming;

. . . . begin planning a longer term project to compile an atlas on Wyoming stratigraphy.

Wyoming Geological Survey
P.O. Box 3008 University Station
Laramie, Wyoming 82070

GEOLOGICAL SURVEY OF WYOMING

INTERPRETING THE PAST
TO PROVIDE
FOR THE
FUTURE

1933