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STATE OF ALASKA
Department of Natural Resources
DIVISION OF MINES AND MINERALS

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Juneau, Alaska 99801

MINES AND PETROLEUM BULLETIN

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JUNEAU OFFICE ADDRESS CHANGED

Please note the new mail address for the Juneau office as shown above in the heading. This change was necessitated by the recent move of the postoffice into the new Federal Building. The new mail address is also proper for the offices of the Commissioner of Natural Resources and the Juneau office of the Division of Lands.

MINING ACTIVITIES

Southeastern - Alaska Barite Co. of Tacoma, Washington is now contracting the construction of a crushing plant and shiploading facilities at its barite property in Duncan Canal west of Petersburg. The company has a crew of about ten men at the mine, and a contractor is driving piles. Alaska Barite leased the Castle Island barite deposit from A-J Industries, Inc. in 1963, and was establishing a plant at Seward at the time of the earthquake. The company was then inactive until earlier this year when it arranged sales and shipment contracts under which it will make three shipments per year of about 24,000 short tons each in vessels owned by the Reynolds Metal Co. These shipments will go to International Minerals & Chemical Corp. at Houston, Texas, and Milchem Inc., at New Orleans, Louisiana. The first shipment is expected to take place about October 1. The ships to be used are the largest of any to come into the area - 625' length, 75' beam, and 32' draft.

Westcentral - Bob Lyman is reported to have improved his concentrating plant at the White Mountain cinnabar deposit by adding a rod mill to the jig and flotation cells. The deposit consists of some high grade, disseminated, and placer cinnabar which is selectively mined.

Coal Mining - New equipment in use includes Westinghouse-Le Tourneau trucks for waste rock at the Evan Jones Mine and a 60-ton tractor-trailer (with two more on order) for coal at the Usibelli Mine. A new railroad siding to provide room for more cars at the tippie is being built for the Vitro Mine. The State's third competitive coal lease sale, described in last month's Bulletin was postponed until Tuesday, August 23, 1966. Details on the sale may be obtained from the Division of Lands, 344 Sixth Ave., Anchorage.

The final contracts for the Healy mine-mouth power plant have been awarded. City Electric Co. of Anchorage was awarded a \$3.1 million contract to construct a 138,000 volt transmission line from Healy to Fairbanks. Gustav Hirsch Organization was awarded a \$580,635.20 contract to construct the Gold Hill Substation. W. R. Graale Co. was awarded a contract for \$163,673 for the Nenana Substation, and General Motors was awarded a \$22,973 contract for the diesel generating unit.

OIL AND GAS NEWS

Eight applications for permits to drill were approved by the Division's Petroleum Branch during the month.

Trading Bay State #2 - Texaco, Inc., Operator - 600' FSL and 3400' FWL, Section 27, T10N-R13W, S.M. This location is about 2 1/2 miles northeast of the Trading Bay Field discovery well.

Trading Bay State #3 - Texaco, Inc., Operator - 660' FSL and 1500' FWL, Section 23, T10N-R13W, S.M. This location is about 3 3/4 miles northeast of the Trading Bay Field discovery well.

Middle Ground Shoal State #A-11-1 - Shell Oil Company, Operator - Surface location (Platform A): 1627' FSL and 435' FEL, Section 11, T8N-R13W, S.M. Bottom hole location: 660' FNL and 660' FWL, Section 1, T8N-R13W, S.M. This bottom hole location is 1/2 mile north of operator's #A-13-1 well and about 8300' north of the platform.

Kustatan (State) #1-A - Union Oil Company of California, Operator - Surface location: 173' FSL and 185' FWL, Section 18, T8N-R13W, S.M. Bottom hole location: 1150' FSL and 660' FEL, Section 18, T8N-R13W, S.M. This well will be sidetracked from the original Kustatan #1 well.

North Middle Ground Shoal State 18745 #1 - Pan American Petroleum Corporation, Operator - Surface location: 1150' FNL and 1150' FWL, Section 28, T10N-R12W, S.M. Bottom hole location: 1980' FSL and 1980' FEL, Section 28, T10N-R12W, S.M. This location is about 7 miles north of producing wells in the Middle Ground Shoal Field and about 3 1/2 miles southwest of the discovery well in the Granite Point Field.

McArthur State #1 - Atlantic Richfield Company, Operator - 2140' FSL and 300' FWL, Section 15, T9N-R13W, S.M. This location, subject to Conservation Order #24, is about 2 1/2 miles northeast of the McArthur River Field.

Forelands Channel State #1-A - Shell Oil Company, Operator - Surface location: 800' FNL and 311' FWL, Section 30, T8N-R13W, S.M. Bottom hole location: 70' FNL and 2568' FEL, Section 30, T8N-R13W, S.M. This well, subject to Conservation Order #25, will be sidetracked from the original Forelands Channel State #1 well.

Kenai Unit #41-2 - Union Oil Company of California, Operator - 600' FNL and 600' FEL, Section 2, T5N-R11W, S.M. This location is about 6 miles northeast of production in the Kenai Field and about 4 miles northwest of production in the Sterling Field.

Conservation Order #24 - The Atlantic Richfield Co. applied for an exception to Section 2061.1 of the Alaska Oil and Gas Conservation Regulations, Title 11, AAC, concerning the location of the McArthur State #1 well. After publication with no protests received, the Alaska Oil and Gas Conservation Committee issued Conservation Order #24. The order permits the operator to locate the well less than 500 feet from the section line.

Conservation Order #25 - The Shell Oil Co. applied for an exception to Section 2061.1 of the Alaska Oil and Gas Conservation Regulations, Title 11, AAC, concerning the bottom hole location of the Forelands Channel State #1-A well. After publication with no protests received, the Alaska Oil and Gas Conservation Committee issued Conservation Order #25. The order permits the operator to directionally drill to a bottom hole location less than 500 feet from a section line.

Middle Ground Shoal Well Spacing Hearing - A public hearing was held on July 12, 1966, to hear testimony on Pan American Petroleum Corporation's request for an exception to spacing regulations for a portion of the Middle Ground Shoal Field. Pan American Petroleum Corp., as operator for Skelly Oil Co., Sinclair Oil and Gas Co., Phillips Petroleum Co., and itself, presented testimony and 8 exhibits to support the request for a temporary spacing order permitting development of a part of the field to an oil well density of 80 acres. That portion of the field which can be developed from the two existing platforms is the area specified in the request.

Shell Oil Co., operator for Standard Oil Co. of California, Western Operations, Inc., Atlantic Richfield Co. and itself, objected to the request and presented testimony and one exhibit in support of their objection.

James A. Williams, Chairman of the Alaska Oil and Gas Conservation Committee of the Department of Natural Resources, presided over the hearing. Thomas R. Marshall, Jr., Executive Secretary, and Karl L. VonderAhe, Member, were the other Committee members present. Charles F. Herbert, Member, could not attend because of prior commitments. The Committee must approve or reject the request within 30 days.

Sample Library - The Petroleum Branch of the Division of Mines and Minerals is the repository for ditch samples (cuttings) and cores from a majority of the exploratory wells drilled in Alaska, excluding the Naval Reserve. The library is located at 3001 Porcupine Drive, Anchorage, Alaska 99504. The telephone number is 272-1577 until October 1, 1966; after that date the number will be 279-1433.

Currently there are more than 100 sets of washed and dried samples, many with core chips. Generally a 10 foot interval is represented by each sample. 75 sets of samples are now available for examination and the remaining sets will become available as the two-year confidential period expires. Efforts are being made to acquire missing sets of samples and to replace those lost in the 1964 earthquake. A complete list of the samples available in the library is in the 1965 Annual Report of the Division of Mines and Minerals.

Room is available at the above location for examination of the samples and cores. Samples must be examined dry and returned to the envelopes without removing any fossils or portions of the samples. The examiner must furnish the microscope, microscope light, and examining trays. Hours are from 8:30 a.m. to 5:00 p.m., Monday through Friday. Thomas R. Marshall, Jr. is the Petroleum Supervisor.

Natural Gas - Two announcements were made during the last few weeks that will have a marked effect on natural gas production. Union Oil Co. of California's wholly owned subsidiary, Collier Carbon and Chemical Corp., will construct two plants in the Nikiski Area: one to manufacture ammonia and the other urea. The urea plant will be a 50-50 joint venture between Collier and the Japan Gas-Chemical Co. The ammonia plant alone will use about 60,000,000 cubic feet of gas per day.

Upon final approval of the United States and Japanese governments, five U.S. oil companies will supply Tokyo Gas Co., Ltd. and Tokyo Electric Power Co., Ltd. with 50 billion cubic feet of natural gas per year. The gas will be converted to a liquid at a plant operated by Phillips Petroleum Co. located on the Kenai Peninsula. The liquid gas will be transported to Japan in special tankers furnished by Marathon Oil Co. Marathon and Phillips, along with Skelly Oil Co., Sinclair Oil and Gas Co., and Pan American Petroleum Corp., will supply the gas.

The average daily production of natural gas during 1965 was about 33,000 MCF. With the ammonia plant expecting to use 60,000 MCF per day and about 137,000 MCF per day being liquefied, these two developments will mean at least 700% production increase by 1970.

Drilling Activity:

<u>Operator</u>	<u>Well Name and Number</u>	<u>Status 7/25/66</u>
Atlantic Richfield Company	McArthur State #1	Drilling
Atlantic Richfield Company	West Foreland Unit #3	Drilling
Austral Oil Company	Federal #1-3	Location
Great Basins Oil Company	Ugashik #1	Drilling
Hunt Oil Company	Oldmans Bay #1	Drilling
Pan American Petroleum Corp.	Cook Inlet State 17591 #1	Drilling
Pan American Petroleum Corp.	Cook Inlet State 17593 #1	Location
Pan American Petroleum Corp.	Cook Inlet State 18741 #2	Comp. Gas Well
Pan American Petroleum Corp.	East MGS 18751 #1	Drilling
Pan American Petroleum Corp.	MGS 17595 #5	Testing
Pan American Petroleum Corp.	MGS 17595 #7	Comp. Oil Well
Pan American Petroleum Corp.	MGS 17595 #8	Location
Pan American Petroleum Corp.	North MGS State 18745 #1	Drilling
Pan American Petroleum Corp.	Tyonek State 17588 #1	Testing
Pan American Petroleum Corp.	West Forelands Unit #2	Drilling
Pan American Petroleum Corp.	Forelands Channel State #1-A	Drilling
Shell Oil Company	MGS A-13-1	Comp. Oil Well
Shell Oil Company	MGS A-11-1	Drilling
Standard Oil Co. of California	Falls Creek #2	Abandoned
Standard Oil Co. of California	Ivan River #1	Drilling
Texaco, Inc.	Coal Bay State #1	Location
Texaco, Inc.	Trading Bay State #1	Location
Texaco, Inc.	Trading Bay State #2	Location
Texaco, Inc.	Trading Bay State #3	Location
Trinity Canadian Drilling Co.	Homesteaders #1	Drilling
Union Oil Co. of California	Kustatan #1	Abandoned lower part of hole
Union Oil Co. of California	Kustatan #1-A	Drilling
Union Oil Co. of California	Kenai Unit #41-2	Location

Production - June, 1966

<u>Field</u>	<u>Zone</u>	<u>Prod. Wells</u>	<u>Oil, Bbls.</u>	<u>Gas, MCF#</u>
Swanson River Field	Hemlock	48	912,806	404,338
			55,774,166*	14,790,954*
	Kenai	2		54,402
				11,417,511*
	Injection, Hemlock	7		3,740,258**
				26,348,493*
Middle Ground Shoal	Hemlock and Kenai	7 (Incl. 1 dual as 2 wells)	153,794	72,457 1/2
			564,069*	259,796*2/

<u>Field</u>	<u>Zone</u>	<u>Prod. Wells</u>	<u>Oil, Bbls.</u>	<u>Gas, MCF#</u>
Kenai	Kenai	15 (Incl. 5 duals as 10 wells)		3,935,357 27,982,460*
Sterling	Kenai	1		9,793 333,091*

Swanson River gas at pressure base 15.025 psi. All other is 14.65 psi.

* Cumulative to July 1, 1966.

** Includes 3,427,843 from Kenai field.

1/ Correction for May, 96,508 MCF.

2/ Correction for May, 187,339 MCF.

LABORATORY SERVICES OF THE DIVISION OF MINES AND MINERALS

The Metallurgy Branch of the Division of Mines and Minerals provides free analytical work as a public service for Alaskan prospectors, miners, and others interested in the development of the State's natural resources. To provide these services, the Division maintains two analytical laboratories - one at Anchorage and the other at College - each of which is equipped with different specialized equipment to perform a variety of analyses. Samples must originate in Alaska. Organized or company-financed exploration parties usually cannot be accommodated except for occasional check samples.

The purpose of this note is to re-acquaint the mining public with the analytical services rendered by the Division. The locations and staffs of the laboratories, brief descriptions of the services available in each laboratory, and suggestions to persons submitting samples are listed and discussed below:

Laboratories

<u>Location</u>	<u>Staff</u>	<u>Principal Services Available</u>
1. Anchorage Laboratory Division of Mines & Minerals 3001 Porcupine Drive Anchorage, Alaska 99504	Miss Nam Ok Cho X-ray Mineralogist Michael Mitchell, Jr. Minerals Lab Technician	Analyses by X-ray fluorescence of ores, rocks, and minerals for most metals, excluding gold, silver, platinum, and some non-metals Mineral identification by X-ray diffraction Mineralogic and petrographic examination
2. College Laboratory Room 102 Eielson Building University of Alaska	Donald R. Stein Assayer	Fire assays for gold and silver Spectrographic analyses

Mailing Address for College Lab:
Division of Mines & Minerals
Box C
College, Alaska 99735

Mineralogic & petrographic examination

Description of Analytical and Identification Services

1. Fire Assays - Fire assaying is the method used to determine the amounts of gold and silver in a sample. A minimum of one pound of sample is required for each assay, however, more material is always desirable in the event that reruns or checks must be made. The procedure consists of grinding the sample and melting it together with a variety of reagents and lead oxide in a fire assay furnace. After melting, the gold and silver are contained in a button of lead. Removal of the lead by a second heating in the furnace leaves only the precious metals, which are then chemically separated and weighed. Fire assaying is performed only in the Division laboratory at College.

The Division is not equipped to perform accurate assays for platinum and its associated metals (iridium, osmium, palladium, rhodium), but the presence of these metals can be determined by fire assay.

2. X-ray Fluorescence Analyses - This relatively new analytical method is applicable to most elements heavier than magnesium (atomic number 12) and is based on the fact that when an element is bombarded by X-rays (a high energy source) it emits a characteristic radiation (fluorescence) that can be quantitatively measured. Procedure for analysis consists of pelletizing 1 gram of ground sample in a hydraulic press and subjecting the pellet to a beam of X-rays. The fluorescent radiation emitted by the elements in the sample is scanned by a radiation counter and recorded automatically on a strip chart.

Two types of fluorescence analyses are reported by the laboratory - quantitative and semi-quantitative. Quantitative analyses are only made on samples which are carefully taken and which are judged to be representative of an ore deposit, rock formation, or any geological or mineralogical specimen that requires more than casual study. In a quantitative analysis the actual number of bursts of fluorescent energy emitted by the element are counted over a set period of time and compared on graphs to known standards of similar matrix. This provides an accurate percentage of the metal contained. Semi-quantitative analyses are run on non-representative samples such as the casual, high grade, or grab samples, and gives the sample submitter a very reliable estimate of the percentage of the element sought. The procedure for a semi-quantitative analysis is less time-consuming than a quantitative analysis as no counting is performed; the amount of element is estimated by visual inspection of the strip chart in comparison to charts of known standards.

The Anchorage laboratory is equipped with the proper instrumentation and standards to analyze for the following elements by X-ray fluorescence:

Quantitative and Semi-quantitative

Antimony	Mercury
Arsenic	Molybdenum
Chromium	Nickel
Copper	Tin
Iron	Titanium
Lead	Tungsten
Manganese	Zinc

Semi-quantitative only

Aluminum	Silicon
Barium	Tantalum
Bismuth	Zirconium
Cadmium	
Cobalt	
Magnesium	
Niobium	

3. Spectrographic Analyses - Rough semi-quantitative spectrographic analyses for most of the solid elements between lithium (atomic number 3) and uranium (atomic number 92) can be performed on the emission spectrometer at the College laboratory. This method requires only a minute amount of sample, which is vaporized in a carbon arc. Upon vaporization the individual elements emit light in the visible spectrum of characteristic wave-lengths which can be observed through a spectroscope. The intensity of the emitted light is directly proportional to the concentration of the element. The elements detected in a spectrographic analysis are reported as occurring in major, minor, and trace concentrations, approximately

equivalent to greater than 10%, 10 to 1%, and less than 1% respectively.

4. Mineralogic and Petrographic Examination - Minerals and rock samples are identified visually on the basis of their physical, chemical, and optical properties and association. If warranted, or if there is some doubt in the identification, the samples may be run on the X-ray diffractometer, a device using principles similar to X-ray fluorescence. Also, if warranted, rock samples may be thin-sectioned and examined under a petrographic microscope. This service is available at both the Anchorage and College laboratories.

5. Other Services - At the Anchorage laboratory a Frantz magnetic separator and heavy liquids are employed to do quantitative mineralogical work on mineral separates and panning concentrates.

Micro-chemical tests to detect metal elements in small amounts of material are used in both laboratories. At the Anchorage laboratory, wet chemical and other methods may be used to analyze for some metals such as beryllium, uranium, and thorium not amenable to analysis by X-ray fluorescence.

The staffs of both laboratories are available to discuss problems concerning sampling, analytical work, and identification.

Suggestions to Sample Submitters

Samples may be mailed or brought in to either of the Division's laboratories, regardless of the type of analysis or identification desired. However, the return of results may be expedited if samples needing only fire assay work (gold, silver, platinum) are sent directly to College and those for which other metals are desired are sent directly to Anchorage.

In regard to mailing samples, the submitter is requested to provide as much information as possible about the sample and the manner in which it was collected. For example, with samples on which the submitter requests analyses or fire assays, it should be noted whether the sample is a piece of float or bedrock. If bedrock, is it representative of a larger area, or is it a casual grab sample or a piece of obvious high grade material. A good representative sample is taken by chipping at regular intervals or cutting a channel across a vein or other mineralized zone. Information should include length of cut or area represented by sample. Also requested is advice on what metal (or metals) the submitter believes the sample should be analyzed for. These data are extremely important in aiding the analytical staff to judge what type of analysis is necessary and what elements or metals should be sought. The decision as to what work is performed on a sample, however, is at the discretion of the professional staff.

IMPORTANT TAX INCENTIVE FOR MINING

On July 29, the U.S. Senate passed HR 4665, which had previously passed the House and which was a companion measure to Senator Gruening's S 3073 introduced in the 88th Congress. The new bill, yet to be signed by the President, will permit the deduction from income of expenditures in mining exploration, without restriction as to amount. Without doubt, this legislation will encourage expansion of mining exploration work in Alaska. It is probably the most important Federal mining legislation enacted within recent years.

MOUNT MCKINLEY NATIONAL PARK BOUNDARY STUDY

The National Park Service is conducting a boundary study this summer to determine if the present limit of the Park will now and in the future permit essential developments, sound wildlife management, and protection against intrusive developments. The study will also include lands adjacent to the Park, since it is probable that a different boundary may be needed.

NEW PUBLICATION

The U.S. Geological Survey has released to Open File a preliminary report consisting of seven sheets of maps and explanation entitled Outcrop/Geologic Maps of the Nuka-Etivluk Region, Northern Alaska. The 2000 square miles mapped is at the headwaters of the Noatak and Colville Rivers.

Open File reports are available for reading at the various U.S. Geological Survey and DM&M offices.

E. AND M.J. METAL MARKET PRICES

	<u>August 1 1966</u>	<u>Month Ago</u>	<u>Year Ago</u>
Copper, per lb.	36.1¢	36¢	36¢
Lead, per lb.	15¢	15¢	16¢
Zinc, per lb.	15¢	15¢	14.5¢
Tin, per lb.	158.95¢	160.10¢	189 1/2¢
Nickel, per lb.	77.75¢	77.75¢	79¢
Platinum per oz.	\$100	\$100	\$97-100
Mercury, per flask	\$410-420	\$330-345	\$675-700
Antimony ore, per unit	\$4.55-5.55	\$4.55-5.55	\$7.30-7.60
Beryllium powder, 98% per lb.	\$54-66	\$54-66	\$54-66
Chrome ore, per long ton	\$31-35	\$31-35	\$31-35
Molybdenum Conc., per lb.	\$1.55	\$1.55	\$1.55
Titanium ore, per ton	\$21-24	\$21-24	\$23-26
Tungsten ore, per unit	\$43.00	\$43.00	\$27.50-28.50
Silver, New York, per oz.	129.3¢	129.3¢	129.3¢
Silver, U.S. Treasury, per oz.	129.29¢	129.29¢	129.29¢