

STATE OF ALASKA

Department of Natural Resources

Division of Geological & Geophysical Surveys

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Alaska's fifth coal-lease sale on May 17:  
A modest new beginning after 11-year hiatus  
By Roy D. Merritt  
DGGs geologist

The State of Alaska, through the Division of Minerals and Energy Management (DMEM), will hold its fifth competitive coal-lease sale on May 17 in conjunction with the Harrison Bay (Beaufort Sea) oil-and-gas lease sale 39 (see AM&G, Jan. 1983).

The coal-lease sale will be the state's first since 1972, and involves the sale of coal-exploration and production rights for 1,677 acres in the Beluga field in the southern Susitna Lowland.

The coals are subbituminous, with very low sulfur and variable ash contents.

Location near tidewater

The area (p. 2) incorporates all of secs. 16 and 17, the southern half of sec. 18 in T. 13 N., R. 12 W., and the southern half of the southeast

quarter of sec. 13, T. 13 N., R. 13 W. Lone Ridge forms the northwest border of the proposed sale area and is the highest point in the region (1,750 ft). The sale area is relatively close to tidewater, about 15 miles northwest of Tyonek and 50 miles west of Anchorage.

The region generally lacks permafrost, and surface mining and reclamation can be conducted without many of the potential environmental and engineering constraints of arctic areas.

Acreage reduced

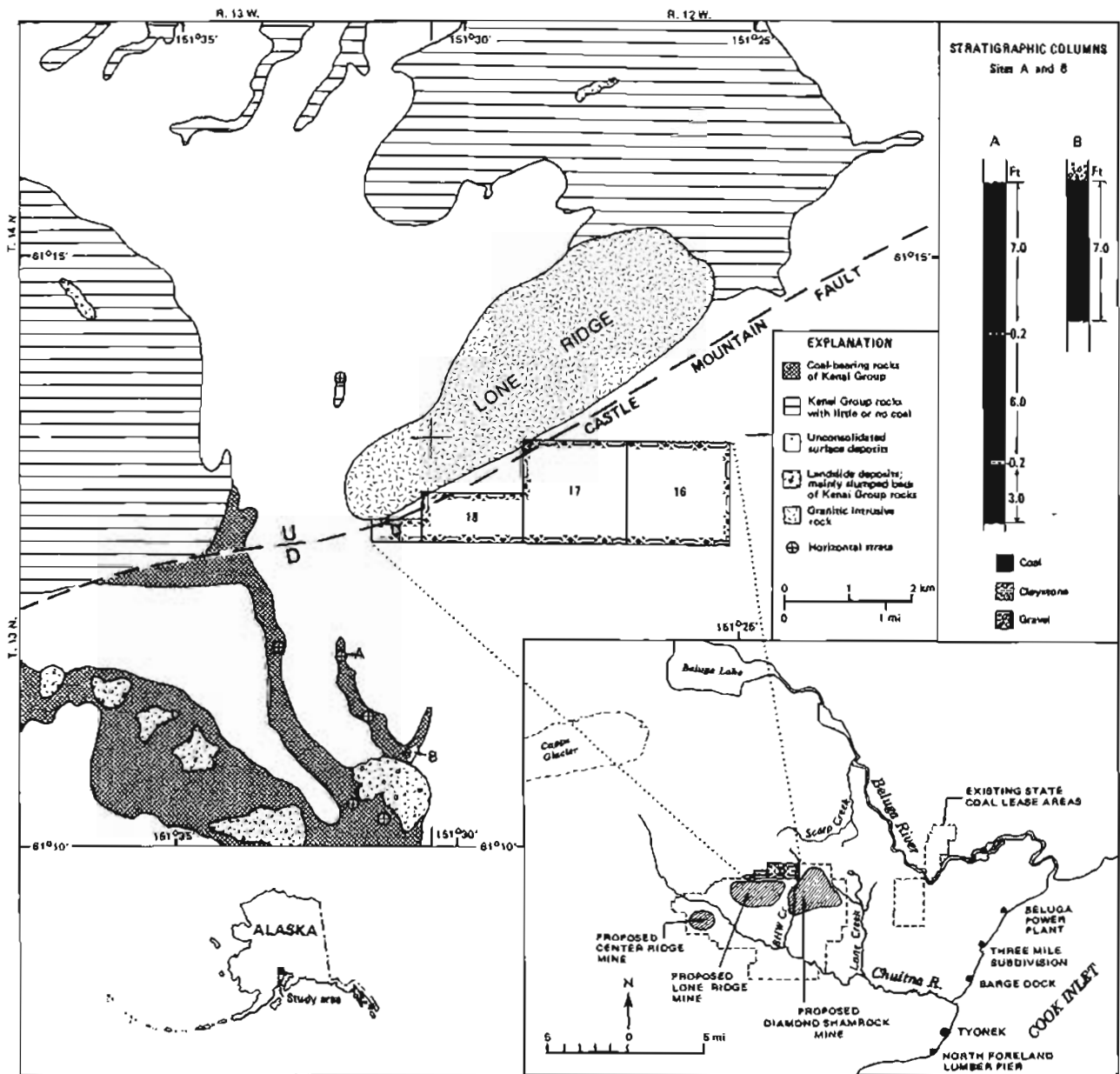
The original proposal, announced last June by former Natural Resources Commissioner John Katz, encompassed 22,677 acres for sale in eight 2,000- to 3,000-acre tracts. This was recently reduced by 21,000 acres to allow DNR to issue a statewide call for nominations to determine which state coal lands are of greatest interest to industry. Recommendations will be used to determine areas for

future competitive leasing and to establish a long-range leasing schedule. DMEM Director Kay Brown has solicited comments from state and local agencies, industry, and the public, and has published her final finding and decision regarding the sale (see References).

On February 17 at the International Conference on Coal, Minerals,

and Petroleum in Anchorage, Governor Sheffield announced the upcoming sale and stated that it would be the first in a coal-leasing schedule to be put together by the state.

In the same forum, new DNR Commissioner Esther Wunnicke said that her goals were making state resource management practical and streamlining the permit process as much as possi-



Area of May 17 coal-lease sale. Inset map shows lease-sale area in relation to existing state coal leases.

ble. She also wants to establish a close partnership between DNR and the Department of Commerce and Economic Development. Wunnicke cited the present conditions of international markets for both oil and coal, as well as the call-for-nominations decision, as reasons for reducing the acreage offered. She added that DNR had administered 55 existing coal leases in the state in 1982, and that 229 coal-prospecting permits (CPPs) had recently been adjudicated and awarded in the Susitna basin.

#### Large areas already under lease

The sale area is surrounded by large tracts of land issued under state coal leases in the 1970s; these areas were explored in the 1960s under CPPs. Legal questions and problems with public-notice procedures for state-land disposals led to the suspension of both coal leasing and the issuance of CPPs in 1975. Although the state's coal-management program was revised in the interim, some individuals suggested revamping the coal-leasing statute, last revised in 1969, before further leases are granted.

#### Beluga field has high potential

Under 11 AAC 85.105, coal leases can only be issued competitively for areas with moderate or high coal potential, as defined by DGGS. Most of the Beluga area---including the proposed lease-sale area---has been designated by DGGS to have a high coal potential.

Coals of the Beluga field are near surface and can be extracted by open-pit-mining methods. Development of the Beluga coal resources may occur within the next decade; some of the leaseholders' in the region hope to begin production in the late 1980s.

#### Leaseholders listed

Diamond Shamrock - Chuitna Coal Joint Venture subleases 20,571 acres from the state; these leases, originally held by the Bass-Hunt-Wilson consortium, are located 10 miles northwest of Tyonek. Beluga Coal (subsidiary of Placer Amex, Inc.) and Cock Inlet Region, Inc. (CIRI) in joint venture hold coal rights on 25,926 acres (17,686 leased from the state, 9,240 from CIRI) in three separate blocks---the Capps, Chuitna, and Threemile deposits, which are 25, 15, and 8 miles northwest of Tyonek. Mobil Oil leases 23,080 acres in two blocks (Canyon Creek and Johnson Creek areas) 55 miles northwest of Tyonek, and has an option agreement with Meadowlark Farms for coal rights on 3,880 acres located on Friday and Saturday Creeks, about 45 miles northwest of Tyonek. There are also several smaller individual leaseholdings in the region. Diamond Alaska Coal Company plans to mine their deposits for direct export, and Beluga Coal plans to either export steam coal or construct a plant to convert coal to methanol.

With the current oil glut and poor international market conditions for coal, the sale has drawn a lukewarm reception from industry. Coal-resource estimates vary for the tract; industry sources originally estimated the minable resource of tract 6 (near the sale area but almost twice as large) at only 3 to 6 million tons. DGGS is more optimistic about the resource base, but solid geologic data (particularly subsurface information) are scarce and all estimates should be regarded as highly speculative. Further exploration and the issuance of CPPs will improve knowledge of the coal resources of the Susitna Lowland, especially of the Yentna basin, north of the Beluga field.

### Reclamation Act preeminent

Alaska now has primacy for regulating all coal surface mining and reclamation activity within the state with the recent approval by the federal Office of Surface Mining (OSM) of the Alaska Surface Coal Mining Control and Reclamation Act (ASCMCRA; Alaska Statute 41.45). The state law is as stringent as the federal law, but performance standards have been modified to be more applicable to the unique mining conditions in Alaska.

The ASCMCRA establishes permit requirements for coal exploration (including surface entry), road construction, and sealing of all boreholes. All mine excavations must be backfilled to approximate original contour and the regraded cast overburden redressed with topsoil or other suitable growth medium and reseeded. Reclamation should be as contemporaneous as possible with mining. Sediment discharges and pollutants such as sulfates and trace elements must be controlled to minimize any disturbance to hydrologic systems; fish and wildlife resources are protected. At her discretion, the DNR Commissioner can set a performance bond to ensure the completion of all reclamation requirements. A Surface Mining Permit must be obtained from DNR before mining begins.

A final DGGs report on the Susitna Lowland coals---the first in the coal atlas series---is in preparation, but will not be printed before the coal-lease sale. Anyone with questions concerning the sale should write to the State Division of Minerals and Energy Management, 555 Cordova Street, Pouch 7-005, Anchorage, 99510, or telephone 276-2653.

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### Glacial workshop held

A workshop on glaciation of Alaska was held at Chena Hot Springs, near Fairbanks, March 17-19. The workshop, hosted by the UA Office of Quaternary Studies, was sponsored by a grant from the Alaska Council on Science and Technology. Coordinators of the workshop were Robert M. Thorson (UA) and Thomas D. Hamilton (U.S. Geological Survey).

The 18 participants included members of the USGS, DGGs, the Geological Survey of Canada, the University of Alaska, and five other universities.

The overall objectives of the workshop were to assess and review the current knowledge of the glacial record of Alaska and to improve communication between researchers by a combination of formal individual presentations, discussion sessions on regional or topical problems, and by infor-

mal ad hoc meetings.

The workshop format and the Chena Hot Springs facilities provided an ideal opportunity for scientists from diverse agencies and institutions to meet and discuss a mutual problem---the interpretation of the Alaska glacial record.

Topics discussed included the overall frequency and style of glaciation for many regions of the state, the means for relative-age and chronometric dating, the relationship between the glacial record and paleoecologic data, and the climatic, tectonic, and paleogeographic implications for the Alaskan glacial sequence.

The results of the conference will be published by the UA Museum as a volume of extended abstracts. Detailed manuscripts are being collected for submittal to the *Journal of Quaternary Research* for inclusion in a special issue on glaciation in Alaska.



#### Research considered big aid for harried miners (from Fairbanks Daily News-Miner, Mar. 11, 1983)

Stringent water quality standards are making it impossible for placer miners to comply with the law, but research could help the industry in the long run, a state hydrologist says.

Research on the effects of placer mining is the thrust of the 2-day placer mining symposium ending today at the Federal Building here. The symposium has attracted about 60 participants. A similar symposium last year in Anchorage drew 30.

George McCoy, employed by the state Division of Geological and Geophysical Surveys, organized the symposium, which is aimed at sharing information about research, either in progress or proposed.

But a spinoff is that some of the studies could help miners fight unreasonable regulations, McCoy said.

Lower-48 standards for placer mining operations aren't always

applicable to Alaska, McCoy said. Glacial flour---a very fine glacial sediment that stays suspended in streams for a long time---is a unique problem.

Aiding miners isn't the symposium's only objective: protecting resources is another. One speaker talked about placer-mining effects on grayling, another on how heavy-metal particulates affect aquatic systems.

Jim Knott and Gary Solin of the U.S. Geological Survey Thursday described a study they will undertake in the Circle, Kantishna, and Silver Creek (Kenai Peninsula) areas. Part of their work will involve marking large particles with dyes and measuring their movement in the rivers.

Such research is important, McCoy says, because "there are a lot of gaps and a lot of work that has to be done" on placer-mining effects.

"We don't really have a good data base to justify the regulations," said McCoy. He does not argue whether regulations are good or bad, but whether they suit the purpose.

If Alaska miners "obey the regulations as they are now, they're out of business," McCoy said.

Generally, McCoy said, the state's regulations, based on U.S. Environmental Protection Agency regulations, set three broad categories of water standards: drinkable water, protection of human health, and suitability for fish and wildlife.

"What we really need are specific regulations. You may need different regulations for the Chatanika than you need for the Birch (Creek) or than you need for Kantishna," he said. The same regulations may not be as appropriate in areas where there are no valuable fisheries or public use as in areas where those are of concern, he added.

McCoy said research funds are tight, and the mining industry itself should consider underwriting some of the studies.

Miners were invited to the

symposium. However, much of the subject matter is geared toward technical aspects of research, more of interest to researchers and scientists.



#### New claims continue downward trend

The number of new claims filed in the first quarter of 1983 continues the downward trend of the past two quarters, decreasing by more than half, from 2,824 to 1,160. This is also a drop from last year at this time, when 2,726 new claims were filed during the first quarter.

The decline is characteristic of this quarter, which is always the slowest time of the year, according to DGGs mining-information clerk Carole Stevenson. Current economic conditions and the depressed world minerals market probably account for the decrease from last year, said her colleague, Resource Officer Dan Wietchy.

Mining activity this past quarter centered in the Fairbanks, Talkeetna, Ketchikan, and Seward areas. The quarter's claims by recording district are:

|                 | <u>Jan.</u> | <u>Feb.</u> | <u>Mar.</u> |
|-----------------|-------------|-------------|-------------|
| Fairbanks       | 275         | 9           | 42          |
| Manley Hot Spr. | 17          | 0           | 0           |
| Nulato          | 12          | 0           | 0           |
| Mt. McKinley    | 6           | 0           | 0           |
| Talkeetna       | 106         | 40          | 22          |
| Palmer          | 17          | 0           | 45          |
| Nome            | 2           | 6           | 15          |
| Seward          | 87          | 39          | 10          |
| Juneau          | 11          | 0           | 12          |
| Ketchikan       | 0           | 0           | 205         |
| Anchorage       | 27          | 0           | 17          |
| Cordova         | 15          | 0           | 24          |
| Valdez          | 2           | 0           | 9           |
| Kuskokwim       | 1           | 19          | 0           |
| Glennallen      | 2           | 25          | 0           |
| Nenana          | 21          | 5           | 0           |
| Haines          | 2           | 0           | 0           |
| Kotzebue        | 1           | 0           | 0           |
| Aleutian Is.    | 0           | 11          | 0           |
| Bethel          | 0           | 0           | 1           |
| Totals          | <u>604</u>  | <u>154</u>  | <u>402</u>  |

#### DGGs issues 3 more mining-claim-status maps

The new series of DGGs maps that contains the complete history of mining-claim activity in Alaska has been augmented by three, bringing the total to 13, said Dan Wietchy, DGGs Resource Management Officer.

Now available are claim-status maps of the Circle, Fairbanks, and Big Delta 1:250,000-scale quadrangles.

For each quadrangle there is one U.S. Bureau of Mines status map containing claims or mineral-occurrence locations---active or inactive--- from 1900 through 1979 and one DGGs map containing the same information from 1980 through 1982. Also included is a reference sheet with the location of the maps, the number of claims, and the years of mining activity.

The initial 10 map sets, released in December 1982, were for the Eagle, De Long Mountains, Philip Smith Mountains, Chandalar, Tanana, Liven-good, Charley River, Ruby, Mt. Hayes, and Talkeetna Quadrangles.

Wietchy believes that prospectors, mining companies, Native corporations, and state and federal agencies will be interested in the maps.

Further information on claim names, claim owners, deeds, leases, and descriptions of labor is available at DGGs in College or the appropriate state recorder's office.

The maps are available for inspection at DGGs offices in Juneau and Ketchikan and for purchase (at \$2 each) at DGGs mining-information offices in Anchorage and College (p. 1).

Claim-status maps for the Circle, Juneau, and Wiseman Quadrangles will be available in July 1983, Wietchy said.



"Never build your house on a perched water table, because your well is likely to dry up in summer. The difficulty is now disappearing since most modern houses have taps."--Geological Howlers.

### Three named to mineral review panel

(from Fairbanks Daily News-Miner, Mar. 24, 1983)

A Fairbanks and a McGrath miner and a former president of the Alaska Miners Association have been named to a review committee to report to Natural Resources Commissioner Esther Wunnicke on how her department can better encourage mineral development.

Wunnicke announced her appointment of the three-member review committee today.

Roger Burggraf, a well-known Fairbanks miner and the developer-operator of the Grant Gold Mine, McGrath placer miner Ron Rosander, and David Heatwole of Anaconda Copper Co. and a former AMA president, have agreed to serve on the committee.

The three miners are asked to give advice on a variety of mining issues and how the Department of Natural Resources might encourage and enhance mineral development.

Wunnicke identified such issues as organization and structure of the department's mining-related activities, permitting, and adjudication of mining claims.

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### Pipeline landforms atlas, 8 RIs released

A report representing 5 years of work by DGGs and "centuries of man-hours" by industry is now available.

Geologic Report 66, 'Air-photo analysis and summary of landform soil properties along the route of the Trans-Alaska Pipeline System,' by R.A. Kreig and R.D. Reger, "is a unique cooperative effort that will probably never be duplicated," said DGGs geologist Dick Reger.

Before the pipeline was built, extensive geotechnical investigations were carried out along the TAPS route. Airphotos were used to interpret and map individual landforms, and 3,500 soil borings provided detailed subsurface information. Geologic Report 66 briefly summarizes, from outstanding

aerial photographs, the geotechnical properties of representative and unique landforms identified during the investigations. The 149-page report, which has 52 figures, 35 tables, and 30 two-color photographs, costs \$5.50.

### 1982 Mineral Survey

Special Report 31, 'Alaska's mineral industry - 1982,' will soon be available. This is the second annual report produced jointly by DGGs and the Alaska Office of Mineral Development. The report summarizes exploration, development, production, and drilling activities (excluding oil and gas) of the Alaskan mineral industry during 1982. (Although the cost of the report was unavailable at AM&G press time, the report is scheduled to be available for inspection at any DGGs mining-information office by mid-May.--Ed. note.)

### Reports of Investigations

The first eight reports in a new series---Reports of Investigation---were recently released. The RI, which presents both preliminary data and final products of investigation, replaces the old Alaska open-file (AOF) series.

Four RIs pertain to the Livengood area. They are:

- RI-83-1, 'Geochemical reconnaissance of the Livengood B-3, B-4, C-3, and C-4 Quadrangles, Alaska: Summary of data on stream-sediment, pan-concentrate, and rock samples,' by M.D. Albanese. 4 pl. (scale 1:63,360), 55 p. \$5.
- RI-83-3, 'Bedrock geologic map of the Livengood B-4 Quadrangle,' by M.D. Albanese. 1 pl. (scale 1:40,000). \$1.
- RI-83-4, 'Bedrock geologic map of the Livengood C-4 Quadrangle,' by M.S. Robinson. 1 pl. (scale

1:40,000). \$1.

RI-83-5, 'Bedrock geologic map of the Livengood C-3 Quadrangle, east-central Alaska,' by T.E. Smith. 1 pl. (scale 1:40,000). \$1.

Two other RIs are the result of a joint geologic and mineral-resource investigation undertaken by DGGs and the University of Alaska at the request of the Fairbanks North Star Borough. They are:

RI-83-2, 'Petrology, geochemistry, and isotope geochronology of the Gilmore Dome and Pedro Dome plutons, Fairbanks mining district, Alaska,' by J.D. Elum. 59 p. \$2.

RI-83-9, 'Geology and mineralization of the Silver Fox Mine, Fairbanks mining district, Alaska,' by G.E. Sherman. 3 pl., 56 p. \$5.

Also released were:

RI-83-8, 'Preliminary geologic map of the Anchorage B-6 NW Quadrangle (Eklutna Lake) Alaska,' by R.G. Updike and C.A. Ulery. 2 pl. (scale 1:10,000). \$4.

RI-83-11, 'Seismic, volcanic, and tsunami mitigation in Alaska - an unmet need,' by J.N. Davies. This 13-page RI is a report of the resolutions called for at a seismology workshop held in Wasilla on Feb. 15 and 16, 1982. The RI costs \$1.

#### Information Circulars

A new information circular was released and another was revised. IC-27, 'List of DGGs reports by region and quadrangle,' is an areal index of every map or report DGGs has ever published. Also available is the updated IC-20, 'State of Alaska aeromagnetic surveys.' Both information circulars are free.

#### \$25 million to be available for mining loans (from Fairbanks Daily News-Miner, Apr. 6, 1983)

An estimated \$25 million will remain available for state loans to miners at the end of this fiscal year, June 30, according to Don Hoover, the man who administers the loan program.

In Fairbanks recently, Hoover talked about the changes in the program made last year by the Legislature.

Eighty percent of the loans the state has made to miners and mining operations since the loan program began in 1980 have been for activities north of the Alaska Range, Hoover said.

Until last year, the loan fund depended on annual state appropriations. It is now a revolving fund, and repayment of principal and interest to the fund will become available to make other loans.

The state program began in 1980 with a \$10 million appropriation, which was loaned out quickly, Hoover said.

Additional funding was pumped into the mining-loan program last year, coupled with previous funds. Approximately \$28.3 million remains available for loans at present. Subtracting pending applications, Hoover anticipates \$25 million will be available at the close of this fiscal year.

One change made last year was to a requirement that the applicant have at least 5 years' mining experience and be a resident, which applied to all corporations, individuals, and partnerships.

Now the requirement applies to partnerships on a 50-percent basis, and corporations on a 51-percent basis. Hoover said that allows Alaskan miners to seek Outside partners and shareholders to participate in their ventures, or to take on junior partners.

It is possible to use a valid mining claim toward the collateral



requirement, Hoover said. The state will loan up to \$5 million to a borrower at 10 percent interest, depending on collateral, with a maximum term of 15 years.

Mining debts may be refinanced up to 49 percent of the original loan amount under the state program.

Hoover said 37 of the 69 applications have been approved since the program began. The approved loans have ranged from \$30,000 to \$5 million, with the majority of loans for \$100,000 to \$500,000.



### Seismic station network may be forced to close

*(from Fairbanks Daily News-Miner, Apr. 13, 1983)*

A network of seismic stations that keep track of earthquakes and volcanoes in south-central Alaska is in danger of closing, according to officials at the University of Alaska.

Since federal funds dried up last September, about 20 stations run by the University's Geophysical Institute have been kept in operation by the state with funds appropriated to cushion the impact of federal cuts. But the state money runs out in June, and none of the bills currently before the Legislature include an appropriation for the monitoring stations, which are spotted along both sides of Cook Inlet and on islands in the Gulf of Alaska.

Not affected are the Alaska Tsunami Warning Center in Palmer and a handful of federally operated seismic stations. A group of about 10 stations the Geophysical Institute operates in the interior is also expected to escape the budget axe.

Division of Geological and Geophysical Surveys seismologist John Davies, whose office is at the Institute, said the UA stations in south-central Alaska are used to study the Border Ranges fault, which runs through the Anchorage area. It has not been active recently, but scientists consider it worth scrutiny.

Another function of the stations, he said, is to monitor the performance of the subduction zone southeast of Anchorage, where the floor of the Pacific Ocean is sliding beneath Alaska at the rate of about 2.5 inches per year. It was this feature which produced the Good Friday Earthquake of 1964.

In addition, Davies said, the stations report on volcanic activity along Cook Inlet and in the Aleutian Islands.

Davies also said scientists need the monitoring stations to detect previously unsuspected faults that produce surprise earthquakes. In California, perhaps the best-studied earthquake area in the country, such an unmapped fault produced the San Fernando earthquake of 1971.

Davies estimates about \$200,000 per year is needed to operate the network. Most of that money goes to pay the cost of visiting each site once a year to change the batteries.

Each station consists of a buried seismic monitor about the size of a 3-pound coffee can, plus an antenna and a trash-can-sized above-ground module that contains the transmitting equipment.



### DGGS active in Alaska Geological Society Symposium

Seven DGGS geologists participated in a recent 1-day symposium in Anchorage conducted by the Alaska Geological Society. The symposium, 'New developments in the Paleozoic geology of Alaska and the Yukon,' was held at the Captain Cook Hotel April 22.

Wyatt Gilbert and Tom Bundtzen gave a talk on Paleozoic rocks in the Farewell area, where two contrasting clastic-carbonate-volcanic facies are present. Northwest of the Farewell fault, along the Cheeneetuk River, 10 lithologic units reflect a platform-continental margin environment.

Later in the afternoon, five DGGS

geologists took part in a poster session.

John Dillon and USGS geologists Tom Dutro and Bill Brosgé presented a compilation of six structural terranes in the Wiseman Quadrangle, each of which has a different stratigraphic sequence.

Kristie MacDonald presented five stratigraphic sections from a well-exposed Ordovician and Silurian 'black-shale' unit in the McGrath A-2, A-3, and B-2 Quadrangles. The sections contain abundant graptolitic horizons and vary in thickness from 150 to 400 m.

Mark Robinson, Tom Smith, Mary Albanese, and Tom Bundtzen described fieldwork done in the Livengood area in conjunction with the UA Mineral Industry Research Lab. The geology of the Livengood area is complex and dominated by rocks ranging in age from Precambrian(?) to Cretaceous. The field phase of geological mapping and geochemical sampling of about 1,000 square miles in four quadrangles is now complete. This project, part of a larger program to evaluate the mineral-resource potential of interior Alaska mining districts, was funded by the state and the Fairbanks North Star Borough.



#### Hold onto pokes, gold miners told

*(from Fairbanks Daily News-Miner, Mar. 31, 1983)*

The good news, according to Charles R. Whitlock, trading analyst for Delta Smelting and Refining, is that the price of gold will go up. The bad news is that he can't predict when.

Gold is currently selling for about \$370 per ounce, Whitlock said Wednesday, speaking at the Fifth Annual Conference on Placer Mining. Gold could rise to \$550 or \$570 by the end of the year and draw as much as \$850 per ounce by 1984, he said.

Therefore, said Whitlock, it might behoove miners to hold onto some

of that yellow metal for the rise in price.

Whitlock was one of the featured speakers at the conference at the University of Alaska-Fairbanks Great Hall sponsored by the UAF School of Mineral Industry and the Alaska Miners Association. About 700 people are participating in the 2-day conference.

In metals, Whitlock said, everything is going up across the board, including gold and silver.

Whitlock has been following precious metals for some 10 years. He is considered by many miners to be extremely good at predicting the price swings of precious metals.

Gold is an 'anxiety' indicator, Whitlock said. When people are nervous about the state of the economy and the world, they lean on assets such as gold and silver.

A major world event can trigger a rise in the price of gold, Whitlock said. However, there are currently no fundamental threats to world peace. Russia and areas in the east have settled down, but if Central America breaks loose, there could be a rapid change in the price of gold, he said.

Also, the United States dictates to the world what the price of gold will be by the inflation index, he said, because the world depends on U.S. production.

Other indicators of the price of gold are interest rates and the overall economy. Whitlock said interest rates and inflation are down, but the economy has suffered because unemployment is up and the housing industry has come to a halt. The Reagan administration is not likely to change its economic policies, he said.

Whitlock said that with America's manufacturing plants currently operating at 67 percent capacity, even with economic recovery, the price of gold will not go up for another 2 to 3 months.

Miners shouldn't care what happens with the price of oil and what

OPEC does, since it will have little or no effect on the price of gold, Whitlock said.

Whitlock said that as gold supply decreases and demand increases, hundreds of holders of gold will be making money.

(Two weeks after Whitlock gave his talk, his company, the Canada-based Delta Smelting, filed for financial reorganization to avoid bankruptcy. The news rocked the placer mining industry in Canada and Alaska.---Ed. note.)

### DGGS adds 3 to staff

DGGS has added a geologist, a hydrologist, and a programmer to the staff.

Larry Lueck is back at DGGS after spending 2 years with the Water Resources section of the State Division of Land and Water Management. A geologist in the Resource Analysis section, Larry is finishing his M.S. in geology at UA-Fairbanks. Larry has a B.A. from Beloit College (Wisconsin). He likes to write fiction and hopes to be published soon.

Steve Mack, DGGS's sole Fairbanks-based hydrologist, also transferred from DLWM, where he was water officer for the north-central district. Steve has a B.A. from Baldwin-Wallace College (Ohio) and an M.S. in urban and regional planning from the University of Arizona; he is working toward an M.S. in hydrology at UA-Fairbanks. Steve likes x-c skiing, canoeing, and bicycling.

Kenneth Rhoads, a program analyst in the Anchorage Data Processing section, worked for Alaska Pacific Bank before joining DGGS. He has a B.A. in computer-information systems from Arizona State University. Born in Alaska, Ken enjoys skiing and fishing.

Young Elliott Decker made his appearance on Friday, April 15. The 9-lb, 13-oz future linebacker is the

firstborn child of DGGS geologist John Decker and his wife, Stephanie.

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### State to take charge of coal surface mining (from Fairbanks Daily News-Miner, Mar. 17, 1983)

The state of Alaska will have primary responsibility for surface mining operations on non-federal lands within its borders under an agreement with the Interior Department announced here Wednesday.

Lieutenant Governor Stephen McAlpine and Assistant Interior Secretary Daniel Miller said at an Interior Department ceremony that they hope the agreement will pave the way for stepped-up production of Alaska's vast coal reserves.

Alaska is the 25th state to have its permanent regulatory program approved and to take the major responsibility for regulating mining activities under terms of the Surface Mining Control and Reclamation Act.

The new arrangement takes effect May 2. It applies only to non-federal lands, although the state may elect to assume regulatory responsibility for federal lands under a cooperative agreement with the Interior Department.

The Interior Department and state officials estimate that Alaska may have as much as 5 trillion tons of coal. Only one mine is operating at present---the Usibelli at Healy, which supplies the Fairbanks area with about 800,000 tons annually. The Usibelli mine recently signed a contract that will lead to the shipping of another 800,000 tons per year to Korea, beginning in 1984.

Other major coal fields include the Beluga area across Cook Inlet from Anchorage (p. 1), with 27 billion tons estimated; Kenai with 24 billion tons; Matanuska Valley, 149 million tons, and north of the Brooks Range, 1.7 trillion tons.

At the brief ceremony, McAlpine said, "This provides Alaska with the

opportunity to provide industry with a framework in which to operate. This provides Alaska with the mechanism to go forward. We recognize the obligations that go with this. We as Alaskans have deep concerns about the environment, and hope to learn from the mistakes that were made in the Lower 48."

Richard Harris, director of the Interior Department's Office of Surface Mining, said it is "fitting that the last state (to assume authority over mining operations) is the state with more coal resources than any in the country."

Harris said Alaska is "in an enviable position...and will prove to be a major source of export to the Pacific Rim."

Harris said the federal government will assume an oversight role, adding, "Alaska has a very workable program. We have a great deal of faith in the state's ability."

McAlpine said he expects coal production to increase in Alaska soon. He noted that a coal lease sale in the Beluga coal fields is scheduled in May, and 229 coal prospecting permits have been issued.

"We intend to go forward with resource development," McAlpine said.

Since 1979, the state has received more than \$1.8 million in interim and program development grants, which has enabled Alaska to pay all the costs of regulating surface coal mining while preparing its own program. With the approval of a permanent program, Alaska becomes eligible for federal funding based on 50 percent of the program costs each year. Approval also clears the way for the state's abandoned mine land reclamation program, which is in the final stages of preparation. Once this is approved, \$600,000 now held in the abandoned mine land fund will be made available to the state. This money represents production fees paid by the Usibelli Mine. It will be used to reclaim land and water resources

adversely affected by previous mining.

The Alaska program will be administered by the Department of Natural Resources.

In a statement issued at the ceremony, Interior Secretary James C. Watt said, "The state of Alaska deserves credit for getting program approval. It may not happen tomorrow, but some day Alaska may have a coal rush to equal its gold rush."

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### DGGS archaeologists participate in conference

Three DGGS staff members took part in the 10th annual meeting of the Alaska Anthropological Association in Anchorage last month.

Craig Mishler, historian, Charles E. Holmes, archaeologist, and Douglas Reger, archaeologist, participated in the conference, held March 11-12 at the Westward Hilton.

Mishler chaired a symposium on the history, architecture, and archaeology of a national register site at Big Delta. Mishler presented a paper titled 'Big Delta: The early historic period, 1898-1906'; Holmes's paper was 'Archaeological testing of an early 20th century cabin ruin at Big Delta.' Reger chaired a session on the archaeology of southern Alaska and gave a talk on the Clam Gulch site.

DGGS archaeologists Greg Dixon, Steve Klingler, and Richard Stern, helped organize the conference.

### History, architecture, and archaeology at Big Delta, Alaska

Big Delta (also known as McCarty, Grundler, and Rika's Landing) was first used as a campsite for Tanana-speaking Athapascans, then as an early trading post, a ferry landing, an Army Signal Corps station, a roadhouse, and an airfield.

A small Indian camp in 1898, Big Delta became the site of a trading post in 1904 and an Army Signal Corps station in 1905. Big Delta grew

because of its location---it was on the Valdez-Fairbanks trail and near the Tenderfoot gold-mining district. In 1906, steamboats began plying the Tanana River in earnest.

In the course of examining a proposed parking facility at the Rika's Landing state-historic site, a large depression next to a dirt road was tested. Artifacts recovered include historic manufactured items and materials made of stone; they suggest that a log structure---probably the small cabin built by Ben Bennett around 1904---was built on earlier cultural deposits related to late prehistoric-early historic Athapascans.

Panel members from the Alaska Division of Parks and DGGs presented the results of recent efforts to excavate the old trading post, restore the roadhouse, and interpret the site for the public.

#### Late prehistoric occupation and resource use at the Clam Gulch site

The Clam Gulch site contains remains of faunal resources harvested by aboriginal inhabitants of the area just prior to the arrival of Euro-Americans. Faunal remains are predominantly marine with various shellfish, salmon, halibut, harbor seal, and cetaceans the most common. Land-mammal remains are varied and sporadic through the middens.

Artifacts from the deposits date to the late-17th and early-18th centuries and, as a group, are unlike any other collections reported in the Cook Inlet basin. Artifacts include barbed bone points, bone awls and pins, bone earrings, carved shell, a birchbark basket, a slate point, and a stone-adze bit.

Results of this study are published in DGGs Open-file Report 172.



"Reefs are what you put on coffins."--Geological Howlers.

#### BLM approves lease from Donnelly Dome coal field

(from Fairbanks Daily News-Miner, Mar. 24, 1983)

With a 20-year lease in hand, a group of Fairbanks investors can proceed with plans to develop coal south of Delta Junction on federal lands for commercial purposes.

When developed, the Jarvis Creek coal field, about 3 miles south of Donnelly Dome, may produce coal to fuel all of Fort Greely as well as Delta-area homes, farms, and businesses. Startup on a modest scale may be a year away, though.

The lease was signed Wednesday by Bureau of Land Management Alaska Director Curt McVee, 20 years after the initial application. In signing the lease, McVee said the BLM hopes to undertake similar moves for resource development on other lands it manages.

With the bureau having transferred more than half the land entitlements to the state and to Native groups, McVee said, the BLM can now focus on management.

The initial application for the federal lease of 2,560 acres in the Jarvis Creek coal field was made in 1963 by Edwin Reed, a prospector who discovered the commercial quantity of coal. Now in his 80s, Reed is retired and living in California.

In 1967, a group of Fairbanksans ---Tom Owen, Robert Loveless, Paul Metz, Jim Thurman, and Bill Swan---bought Read's claim and took over the application.

"It's been a long and frustrating wait," Owen said after the lease was signed at the BLM office on Fort Wainwright.

The lease is actually to Read, as a protection of his interests, but the Fairbanks group will be the developers.

McVee explained that the lease was snarled by the Alaska Native Claims Settlement Act of 1972 and the Alaska Lands Act of 1981, with the application on hold until those claims

and land withdrawals were resolved.

Another complication, McVee said, was that the Jarvis Creek lands are in the oil-pipeline right-of-way.

Uncle Sam won't realize much revenue, even though the lease sets a 12½ percent royalty for coal developed by strip or auger mining methods and 8 percent for underground mining. Rental is \$3 per acre annually, or \$7,680. The investors had to post an \$18,000 bond.

"Ninety percent of the income we make off natural resources goes back to the state," McVee said. "The reason behind it is the state has so much public land. These represent lands that are not providing a tax base" to Alaska.

That percentage varies, though. For instance, in the National Petroleum Reserve-Alaska, 50 percent of oil and gas production royalties go to the state.

Owen said the group still must apply for permits and submit a production plan. The group filed an environmental assessment report last year.

Owen said the document file on this lease is at least 18 inches thick, and it includes the past filings on the quantity and quality of the coal deposit.

"We pledge to have a very clean operation. We feel very strongly we can have the development and still protect the environment," Owen said. The operation must meet federal reclamation requirements.

A feasibility study to convert Fort Greely's power plant from oil to coal is being conducted by the Army. Owen said the fort is the biggest potential customer.

One of the happiest onlookers during the signing was Frank Geiger, president of the Delta Chamber of Commerce. The operation will mean jobs for Delta, Geiger said, at the mine as well as in spinoff activities. One Delta resident is already considering a retail coal-sales business, said Geiger, and there may be transportation-related jobs.

### Oil questions mount on Prudhoe decline

by Douglas Martin, The New York Times  
(from Fairbanks Daily News-Miner, Mar. 28, 1983)

Measured by the wind-chill factor, the temperature was 86 degrees below zero, driving snow made it impossible to see more than a few feet, and even the ravens seemed to be huddling from the cold. It was a typical March day at Prudhoe Bay, America's biggest oilfield.

"It's like working on the moon," K.C. Kilty, a production technician, said of the effort required to maintain the mammoth oil wells, each of which pumps more than 400 times as much oil as the average well in the Lower 48.

Still, much of the hardship of searching for oil 250 miles north of the Arctic Circle has been ameliorated. And Alaska has grown into a leading petroleum province, the only one in the United States that can be mentioned in the same breath with the Persian Gulf kingdoms, the North Sea, and Mexico.

But there is trouble on the Arctic horizon, which at this time of the year is the color of rose champagne. For within a few years---perhaps as early as 1985---production from Prudhoe Bay is expected to decline sharply as the natural difficulties and costs of tapping its vast oil supply mount.

The trouble in getting the Prudhoe oil out of the ground, mainly the result of a decline in the underground pressures that force it to the surface, has long been anticipated and would have caused less concern if world oil prices had continued to increase, as many experts were forecasting just a few years ago.

With prices dropping, however, it is beginning to be questionable whether the industry will either get the most out of Prudhoe with increasingly costly technologies or replace the lost production with costly new discoveries.

"Any way you look at it, there's

not a chance that the present rate of production is going to continue beyond 1988," said C.V. Chatterton, chairman of the Alaska Oil and Gas Conservation Commission. "And I don't see how any new field can possibly be brought into production before the decline sets in for the Prudhoe Bay field."

To be sure, experts believe that Alaska still offers the nation's best opportunities for finding exceptionally large amounts of oil. A number of smaller fields have already been found, and opportunities offshore in the Beaufort and Bering Seas are judged excellent. But even so, the new finds are unlikely, the experts say, to make up the shortfall expected in Prudhoe's decline.

As of now, however, Alaskan oil is a major energy blessing. With only one-thousandth the number of wells drilled in Texas, the oil industry in Alaska is producing 1.7 million barrels of oil a day compared with 2.5 million in Texas, the nation's leading oil-producing state. Alaska's output could be far greater, but the 800-mile-long Trans-Alaska Pipeline System would not hold it.

Today, a fifth of American petroleum output flows from the North Slope, and experts believe that half the oil yet to be found in the United States is in Alaska. Matching that scale, however, are expenses, technical challenges, and distances from supplies and markets.

"If you found a 50-million-barrel field in Alaska, you'd call it a dry hole and go on to the next thing," G.T. Wilkinson, vice president of the Arco Exploration Co., a unit of the Atlantic Richfield Co., said with a shrug. The reason: Larger fields can be found to better justify the huge cost of field development.

Even apparently rich prospects, however, are being subjected to closer scrutiny because of the sharply circumscribed cash flow of the oil companies. Petroleum Analysis Ltd., a consulting firm based in New York,

calculates that the profits of major oil companies last year declined by 19.4 percent, which means they have less money to plow into the ground at a time when costs are continuing to rise. "There is a distinct slowdown in the availability of risk money looking for new fields," Chatterton said.

Prudhoe currently produces 1.5 million barrels of oil a day, more than the amount pumped by each of 10 of the 13 financially strained members of the Organization of Petroleum Exporting Companies. (Only Saudi Arabia, Iran, and Venezuela produce more.) But Chatterton and others estimate that, starting in 1988, the annual decline in production will be between 15 percent and 20 percent; this means that by 1995, Prudhoe Bay would be pumping only 120,000 barrels a day.

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#### Our Gangue...

By Frank Larson, Editor

Multiple choice: Because of a) a lack of minerals news, b) springtime malaise on the part of the editor, c) weltanschmerz, or d) all of the above, there is no Our Gangue column this issue. However, if you are unsatisfied, simply fill out the following official State of Alaska complaint form (No. 83-7563K/9) and return it to any state office by June 30, the close of the fiscal year. Your subscription fee will be promptly refunded.

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## Metals Market

|                                     | <u>Apr. 18, 1983</u> | <u>3 Months Ago<br/>(1/17/83)</u> | <u>1 Year Ago<br/>(5/3/82)</u> |
|-------------------------------------|----------------------|-----------------------------------|--------------------------------|
| Antimony metal per lb (NY dealer)   | \$ 0.95              | \$ 0.90                           | \$ 1.20                        |
| Beryllium ore, stu*                 | \$110-135            | \$110-135                         | \$100-130                      |
| Chrome ore per long ton (Transvaal) | \$ 48-52             | \$ 48-52                          | \$ 48-52                       |
| Copper per lb (MW-prod)             | \$ 0.82              | \$ 0.81                           | \$ 0.76                        |
| Gold per oz                         | \$ 432.15            | \$ 482.10                         | \$ 354.65                      |
| Lead per lb                         | \$ 0.21              | \$ 0.23                           | \$ 0.26                        |
| Mercury per 76-lb flask             | \$ 340.00            | \$ 380.00                         | \$ 364.00                      |
| Molybdenum conc. per lb (Climax)    | \$ **                | \$ **                             | \$ 7.90                        |
| Nickel per lb (cathode)             | \$ 2.27              | \$ 1.78                           | \$ 2.60                        |
| Platinum per oz                     | \$ 419.72            | \$ 470.20                         | \$ 334.70                      |
| Silver per oz (H&H)                 | \$ 11.44             | \$ 12.23                          | \$ 7.13                        |
| Tin per lb (MW composite)           | \$ 6.94              | \$ 6.21                           | \$ 6.59                        |
| Titanium ore per ton (ilmenite)     | \$ 70-75             | \$ 70-75                          | \$ 70-75                       |
| Tungsten per unit (GSA domestic)    | \$ 99.60             | \$ 99.60                          | \$ 92.66                       |
| Zinc per lb (MW-US PW)              | \$ 0.38              | \$ 0.41                           | \$ 0.35                        |

\* - Standard ton unit (20 lb); \*\* List price suspended.

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