

# STATE OF ALASKA

## Department of Natural Resources

### Division of Geological & Geophysical Surveys

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# ALASKA MINES & GEOLOGY

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Esther C. Wunnicke—Commissioner

Ross G. Schaff—State Geologist

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### DGGS summarizes Alaska's 1983 exploration and production

By DGGS geologists T.K. Bundtzen and G.R. Eakins  
(from *Mining Engineering*, May 1984)

Total value of 1983 production in Alaska (excluding oil and gas) was \$232.4 million, up nearly 18 percent from 1982. The sand-and-gravel and building-stone industries were responsible for the high overall values. About 5.3 t (169,000 oz) of gold were produced from 300 placer mines last year, about the same as 1982. No lode-gold production was reported.

Although development expenditures decreased \$27.8 million and exploration continued to drop from record levels set from 1979 to 1981, the total 1983 value for exploration, development, and production was \$294.3 million, up nearly 4 percent from 1982's \$283 million. Grass-roots exploration continued, and at least two important discoveries were made or announced in 1983---the Johnson River precious- and base-metal deposits west of Anchorage and the Coal Creek tin-

copper deposit near Talkeetna.

The state's administration indicated its support of the mining industry. The Office of Management and Budget will begin developing regulations to streamline permitting processes and establish offices in Anchorage, Fairbanks, and Juneau. Governor Bill Sheffield directed Alaska's Department of Natural Resources (DNR) Commissioner Esther C. Wunnicke to establish a Division of Mining within DNR. The governor said this division will give specific attention to the state's administration of mining issues. The new division became effective Feb. 1, 1984.

### Exploration

While reported exploration expenditures for 1983 indicate an overall decline from previous years, interest in precious metals, tin, and tungsten remained high. The potential for new discoveries and large-scale mineral

production in Alaska has not lessened, and companies are continuing to do assessment work and explore claims acquired during the past few years.

A surge in prospecting and development of offshore minerals in Alaska has occurred during the past 2 years. DNR is reactivating the state's offshore program and will issue permits to explore for minerals on submerged lands.

Total reported 1983 expenditures for exploration were \$34.1 million, down 26 percent from 1982 and 36 percent from 1981. Other indicators of mineral-exploration activities are the number of claims on which assessment work was performed and the number of new claims staked. Both declined sharply last year.

#### Company Activities

The Wulik basin in the De Long Mountains is the site of extensive study and exploration centered around the Red Dog, Lik, and Sue deposits. Cominco Alaska, Inc., in partnership with NANA Regional Corp., considers the Red Dog deposit in the development stage. Additional drilling last season did not significantly change previously announced reserve estimates for the 'Main' deposit. Cominco also continued work on the Sue deposit just west of Red Dog. Its assessment work in the Ambler district included drilling and geological, geochemical, and geophysical surveys.

Bear Creek Mining Co. conducted baseline exploration in the Noatak district, assessment work on its giant Arctic Camp deposits in the Ambler district, and drilling on its Bornite (Ruby Creek) deposit in the Cosmos Hills.

Anaconda has an agreement with the Cook Inlet Region, Inc. (CIRI) to explore CIRI's lands in south-central Alaska. Under the agreement, Anaconda had a sizable crew on the Johnson prospect south of Tuxedni Bay on the west side of Cook Inlet. Drilling and

geochemical and geophysical surveys were conducted to evaluate the deposit for base and precious metals. Anaconda reported one drill hole assayed 41 g/t (1.2 oz per st) of gold and 24.8 percent zinc. CIRI said exploration will continue for another 2 years before a decision is made whether to develop the property.

Anaconda continued drilling, trenching, and geologic studies of a major tin deposit at Kougarok Mountain, 130 km (80 miles) north of Nome on the Seward Peninsula. Anaconda has applied for a permit to construct a 1.8-km (6,000-ft)-long airstrip on Budd Creek and a connecting 16-km (10-mile)-long access road to serve the prospect area.

Exploration by Houston International Minerals Corp. at Coal Creek, 8 km (5 miles) west of the Parks Highway near Hurricane Station, resulted in discovery of a tin-bearing sheeted 'greisen' vein system. The veins contain cassiterite, sphalerite, arsenopyrite, and subordinate pyrite, chalcopyrite, and pyrrhotite. Drilling indicated a 4.5-Mt (5-million-st) deposit grading better than 0.2 percent tin. Most veins lie within an early Tertiary granite that intrudes older granite and metasedimentary rocks.

Hanson Properties, Inc., of Spokane encountered difficulties in reactivating the Goodnews Bay platinum dredge. During the 1983 season, most of the company's efforts were directed toward exploring its plater gravel by digging test pits.

Noranda Exploration, Inc., evaluated deep, meandering bench placers on Mud Creek in the Fairhaven district 5.6 km (3.5 miles) west of Candle. A company geologist said the gold may be in old strandlines and ancient sandbars. Using a Hawker Sidley Super-drill, the company hopes to locate a 7.6-hm<sup>3</sup> (10-million-yd<sup>3</sup>) deposit.

Noranda reentered the old Nabesna Gold mine in the eastern Alaska Range. The company built a 3.2-km (2-mile) long road, restored portals, and per-

formed bulk sampling, about 365 m (1,200 ft) of surface drilling, and underground work.

Teton Exploration Drilling, in a joint venture with Resource Associates of Alaska, drilled the Zakley property on the south flank of the Alaska Range in the Mt. Hayes Quadrangle. The gold-silver-copper deposit is in a skarn zone that reportedly extends for 1.6 km (1 mile) along the granite-limestone contact.

Aspen Exploration is seeking a permit from the U.S. Army Corps of Engineers to sample gravel and mineral deposits at 31 sites along the shore of Cook Inlet from Kalgin Island to Knik Arm and along the coast of the Kenai Peninsula.

Placid Oil Co. continued to aggressively explore a large block of claims in the Cleary area 32 km (20 miles) north of Fairbanks. Both vein systems and placer deposits are being tested, primarily for precious metals. Also in the Cleary district and at Livengood, Mohawk Resources Alaska and Alaska Mineral Services conducted exploration and worked on mills for processing local ores.

Hawley Resource Group continued drilling at the old Big Hurrah gold mine on the southern coast of the Seward Peninsula. The project has been underway for the past two seasons. The principal developer is Cornwall Pacific of Vancouver. The ore contains primarily gold, but tungsten values are also reported.

Alaska Apollo Gold Mines, Ltd., dominated exploration news in the Alaska Peninsula-Aleutian Island region last year. The company began a 6-km (20,000-ft) surface and underground drilling program at the old Apollo and Sitka Mines on Unga Island in the Shumagain Island group. Eight ore zones have been defined. The Empire Ridge area east of the Apollo Mine may have a potential for production. Teton Exploration Drilling and Resource Associates of Alaska were also exploring on Unga Island.

Exploration and engineering studies are proceeding at several Alaskan coal fields. Valley Coal drilled Matanuska Valley coal leases northeast of Palmer. The Korean Alaska Development Corp. and Chugach Natives, Inc., conducted mapping in the Bering River coal field. When the field is developed, Chugach proposes to export 2.7-4.5 Mt/a (3-5 million stpy) of high-quality coal to South Korea. Placer Amax and Diamond Shamrock each have environmental and marketing studies underway in the Beluga coal field.

#### Development Projects and Reserves

Exploration was conducted in 1984 in conjunction with several well-known Alaskan development projects.

Doyon Regional Corp. continued exploration and development drilling on its Slate Creek asbestos deposit despite problems in the asbestos industry. Reserves are an estimated 55 Mt (61 million st) of 5-6 percent 4A-7D-quality asbestos fiber.

Reserve estimates at the Greens Creek deposit 29 km (18 miles) west of Juneau have been enlarged to 3.6 Mt (4 million st) of 8-10 percent zinc, 2.5 percent lead, 0.5 percent copper, 343 g/t (10 oz per st) silver, and 3.4 g/t (0.1 oz per st) gold. Many analysts believe this project is the most likely of the Alaskan mineral developments to reach production on schedule. Several hundred employees will mine and mill 770 t/d. (850 stpd) using underground cut-and-fill methods.

The Juneau Gold Mining Co. completed exploration of the old Gastineau Mine mill tailings. Beginning this spring, Juneau Gold estimated that 3.6 Mt (4 million st) of a total 10 Mt (11 million st) of tailings deposited in Gastineau Channel between 1915 and 1920 will be recovered by a floating 'cutter' dredge and processed using centrifuge technology.

On the basis of 76 km (250,000

ft) of diamond drilling, U.S. Borax estimates its mineral deposit at Quartz Hill east of Ketchikan contains more than 1.4 Gt (1.5 billion st) of minable ore grading 0.136 percent  $\text{MoS}_2$ . This figure includes 272 Mt (300 million st) of near-surface ore grading more than 0.2 percent  $\text{MoS}_2$ . In 1983, a 15-km (9.5-mile)-long road accessing the ore body to the coast was completed, and a 4.5-kt (5,000-st) bulk sample was shipped to Hanna Research Center in Minnesota. Results of metallurgical testing proved the ore will be inexpensive to process and is relatively clean. ✕

#### State clerks have a field day

By Kathi Smoyer, DGGs student intern

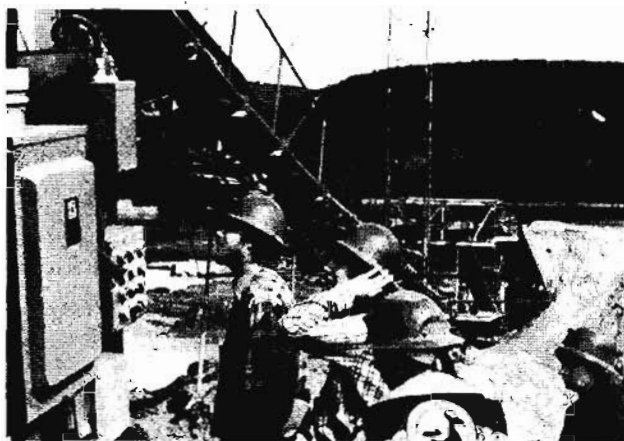
Normally, geologists go out into the field and their secretaries and receptionists stay in the office. But on June 13, members of the clerical staffs of the DGGs, the DNR Division of Mining, the UA Mineral Industry Research Laboratory, the UA School of Mineral Engineering, the state Office of Mineral Development, and the Northern Alaska Environmental Center were taken on a mines tour of the Fairbanks district.

#### Grant Mine

Four mines---two hard rock and two placer---were visited by the 17 participants. First was the Grant Gold Mine, owned by Silverado Mines and operated by Tri-Con Mining. The Grant mine is an underground hard-rock operation located on Ester Dome. Vice-president Wayne Murton told the group, "One of the big problems facing miners today is land use."

Jeff Burton, former mining engineer for the Grant Mine, said that ideally, land should be mined before it is subdivided for homes because mining cleans up the area and removes arsenic and permafrost from the soil.

Burton said that Fairbanks is the seventh largest mining district in the



Earthmovers crew inspects wash plant at Ester Placer Deposit.

United States and consists mostly of placer operations.

The Grant Mine is not now producing because of gold prices, but Tri-Con has a crew diamond drilling in hopes of expanding ore reserves (p. 15).

#### Ester Placer Deposit

Next on the agenda was the Ester placer deposit, owned by James Thurman and operated by Earthmovers of Fairbanks. Foreman Robert Sparks gave the group a tour of the grounds; their equipment was idle because they are expanding their operation. But from



Sandy Garbowski (Division of Mining) and Norma Wynen (Office of Mineral Development) try not to think about trapped-miner headlines as they prepare to enter the Silver Fox Mine.

Sparks and our two guides, Burton and DGGs geologist Larry Lueck, we learned much about processing methods and the history of gold mining. Sparks said his operation was "bigger than the average placer mine." (Actually, it is one of the largest operating placer mines in Alaska.)

#### EVECO Mine

After a refreshing lunch at Fox Springs, the group went to the placer deposit of EVECO, Inc., near Fox. According to EVECO vice-president Alice Ebenal, the mine produces gold as a byproduct of its sand-and-gravel operation. Mine tailings are ideal for private access roads, Ebenal said. The streamlined organization, efficiency, and environmental awareness of this operation is outstanding because each mining product is separated and used, resulting in no waste. Ebenal, named Fairbanks 1982 Businesswoman of the Year, predicts about 12 more years of reserves for the operation.

#### Silver Fox Mine

Perhaps the highlight of the trip was the Silver Fox Mine. After donning survival packs and headlamps, the group was led single-file into a tunnel to observe minerals in the rock and mine workings.



Wayne Murton shows drill core from gold-bearing vein of Grant Mine.

The Silver Fox Mine, donated to the University of Alaska by longtime interior miner Tury F. Anderson, contains lead, zinc, tungsten, and silver.

The mines tour, which was sponsored jointly by DGGs and DOM, was coordinated and guided by Burton and Lueck to better educate the clerical staff of state agencies on mining methods and techniques. Burton referred to it as a "hands-on field trip."

The tour received an enthusiastic response. DOM Resource Technician Sandy Garbowski said, "It was nice to get out and see the actual mines rather than just hear about them all the time. It would have been even more interesting, though, if we could have seen the mines in operation."

DGGs clerk-typist Bernie Syvertson said, "I really like history, especially local history. Mining has always been a fascinating thing and a part of Fairbanks history, and I enjoyed just getting out and doing it!"

Another clerk-typist said, "Now I'll be better able to understand what I'm typing and proofreading."

As for myself, I found the trip to be quite an experience, but I think I've come down with a touch of gold fever!



#### State not learning quake lessons, State Geologist says

(from Fairbanks Daily News-Miner, June 1, 1984)

Many geologic lessons of the great Alaska earthquake of 1964 have been ignored, and buildings have sprouted on unstable or dangerous ground in cities hard hit by the tremor, the State Geologist said Thursday.

Scientists gained enormous knowledge about the seismic dynamics of Alaska, but seldom was it put to use outside of the scientific community, Ross G. Schaff told a symposium at the annual meeting of the Geological Society of America.

"Those lessons did not, as they

should have, become fundamental to the formulation of public policy," Schaff said.

He pointed to building development in Anchorage, Seward, and Valdez as examples of lessons not learned from the Good Friday earthquake of 1964.

He noted that a scientific and engineering task force recommended that construction in the L Street slide zone, which affected 30 blocks in the midtown area, be limited to light structures no more than two stories high.

"These recommendations were not followed, and within a year after the earthquake the L Street slide area was rezoned to permit heavy occupancy and high-rise construction," Schaff said.

"Today, large buildings are perched on the leading edge of this slide zone. The collapsed zone at the back of the slide has been backfilled with unconsolidated material and office buildings erected. This does not make good sense."

Schaff also said the task force recommended that the Turnagain slide area in Anchorage, where 75 homes were destroyed, be declared unsuitable for safe habitation and turned into a park because of future seismic hazards.

"Although those who lost their homes and land in 1964 received lots on state land elsewhere in the city at a nominal cost, the state of Alaska failed to acquire title to the landslide lots," Schaff said.

"Today, resettlement of the slide zone is occurring, and the lots that dropped 30 feet and slid horizontally as much as 2,000 feet are now selling at \$100,000 per lot."

Schaff also pointed to resettlement of the original townsite of Valdez, which was abandoned because of unstable ground and damage caused by submarine slides and seismic sea waves.

"The recent increased interest in the Seward port area is forcing major construction efforts along a shoreline

marked by historic sufference of slides and resultant wave runup," he added.

"Kodiak harbor is one of the busiest fishing ports in the nation, and yet tsunami warning and protection remains inadequate since the 10 seismic sea waves rushed through the town in 1964."

Despite what he called the lessons unlearned, Schaff said there were positive results from the 1964 earthquake, including a general awareness among Alaskans of the potential for damage and death from earthquakes, and the need to remain aware of their inevitability.

"While we learned the lessons of nature well and can say that we are dealing with a seismic time bomb in Alaska, as a scientific and engineering community we need to learn better how to translate our scientific conclusions so they become more useful in the development of public policy, law, and attitudes," Schaff said.



#### 1,923 new claims filed; down somewhat over last year

The number of mining claims filed during the second quarter of 1984 totaled 1,923. This is down almost 20 percent from the previous quarter's total of 2,431; 2,188 claims were filed during this period last year.

Filing activity is expected to rise during the last 3 months of the year, when many prospectors file.

Most of the mining-claim activity during this period was concentrated in the Fairbanks, Iliamna, and Petersburg areas. The claims by recording district are:

|                 | <u>Apr.</u> | <u>May</u> | <u>June</u> |
|-----------------|-------------|------------|-------------|
| Fairbanks       | 161         | 335        | 244         |
| Barrow          | -           | -          | 1           |
| Manley Hot Spr. | 1           | 3          | 8           |
| Nulato          | -           | 6          | 20          |
| Nenana          | 22          | 16         | 22          |
| Rampart         | -           | -          | 11          |

|            |     |     |     |
|------------|-----|-----|-----|
| Talkeetna  | 105 | 38  | 75  |
| Palmer     | 8   | 3   | 26  |
| Nome       | 3   | 10  | -   |
| Seward     | -   | 24  | 6   |
| Juneau     | -   | 16  | -   |
| Haines     | -   | -   | 4   |
| Petersburg | -   | 225 | -   |
| Ketchikan  | 2   | 9   | -   |
| Sitka      | -   | -   | 8   |
| Anchorage  | 52  | 25  | -   |
| Iliamna    | 230 | -   | -   |
| Chitina    | 8   | 3   | 33  |
| Bethel     | -   | 46  | -   |
| Kuskokwim  | -   | 64  | -   |
| Kodiak     | 50  | -   | -   |
| Totals     | 642 | 823 | 458 |

✱

#### Mining grant bill okayed

(from Fairbanks Daily News-Miner, June 23, 1984)

Gov. Bill Sheffield Friday signed into law a bill that will allow the state's placer miners to receive grants of up to \$100,000 to study different techniques of meeting federal water-quality standards in streams and more efficient ways of finding gold.

The law, sponsored by state Sen. Bettye Fahrenkamp, is designed to advance mining technology, Sheffield said while signing the bill into law during a meeting of the Farthest North Chapter of the Alaska Press Club.

Sheffield also said he will approve the bill appropriating \$1.5 million for each area of the grants.

Fahrenkamp, D-Fairbanks, said Friday the law will better allow all uses of the state's rivers such as mining and fishing.

Under the law, placer miners can receive up to \$100,000 to study and test new mining techniques to control the water pollution that results from mining. Also, up to \$50,000 could be given to miners who try to recycle water in placer-mining operations.

If the experiments work, the miner owes the state nothing, and the technology can be passed on to miners working in other streams. But if the experiments fail, the grants convert

to loans and the state will get its investment back.

The act, approved by the Governor June 22, 1984, took effect July 1, 1984. It is reprinted in its entirety below.---Ed. note.

#### Chapter 131

#### An Act

Relating to the management and use of water in mining; and providing for an effective date.

\*Section 1. AS 46 is amended by adding a new chapter to read:

#### CHAPTER 16. MANAGEMENT AND USE OF WATER IN MINING.

Sec. 46.16.010. MINING WATER USE REVIEW COMMITTEE ESTABLISHED. The mining water-use review committee is established. The review committee is responsible for reviewing and making recommendations on applications for grants under this chapter.

Sec. 46.16.020. MEMBERSHIP OF THE REVIEW COMMITTEE. (a) The review committee consists of the commissioner of natural resources, the commissioner of environmental conservation, the dean of the school of mineral industry at the University of Alaska, two individuals appointed by the governor who have placer-mining experience, and one public member appointed by the governor.

(b) An individual described in (a) of this section who serves ex officio may designate an alternate to serve on the review committee.

(c) An individual appointed by the governor serves for a three-year term.

Sec. 46.16.030. RESPONSIBILITY OF THE REVIEW COMMITTEE (a) The review committee shall select a presiding officer and establish procedures necessary to implement its responsibilities.

(b) The review committee shall



review each application for a grant filed under this chapter and make a recommendation to the commissioner of natural resources or to the commissioner of environmental conservation for action on the application.

(c) In making its recommendation, the committee shall consider the economic benefits to the placer-mining industry, the environmental benefits to the public, and other benefits that each grant may offer.

Sec. 46.16.040. RESPONSIBILITY OF COMMISSIONER OF NATURAL RESOURCES. The commissioner of natural resources shall administer the innovative gold-recovery-demonstration grant program established under AS 46.16.070.

Sec. 46.16.050. RESPONSIBILITY OF COMMISSIONER OF ENVIRONMENTAL CONSERVATION. The commissioner of environmental conservation shall administer the innovative pollution-control-demonstration grant program established under AS 46.16.080.

Sec. 46.16.060. UNIFORM REGULATIONS. The commissioner of natural resources and the commissioner of environmental conservation shall adopt uniform regulations and administrative procedures to implement the grant program established by this chapter.

Sec. 46.16.070. INNOVATIVE GOLD RECOVERY DEMONSTRATION GRANT. (a) The innovative gold recovery demonstration grant program is established as a direct grant program to give a person engaged in placer mining the opportunity to study and test new methods of gold recovery and water use reduction.

(b) The commissioner of natural resources may make a grant under this section to a person that has

(1) a proven history of successful placer mining in the state;

(2) the capability to produce verifiable results; and

(3) the capability to study and test new methods of gold recovery and water use reduction under actual operating conditions.

(c) The commissioner of natural

resources may not make a grant under this section to a person in excess of \$100,000.

(d) The commissioner of natural resources shall monitor and evaluate the results of grants made under this section.

Sec. 46.16.080. INNOVATIVE POLLUTION CONTROL DEMONSTRATION PROGRAM.

(a) The innovative pollution control demonstration grant program is established as a direct grant program to give a person engaged in placer mining the opportunity to study and test innovative and economically viable mining techniques for waste disposal and pollution control in placer mining.

(b) The commissioner of environmental conservation may make grants under this section to a person that has

(1) a proven history of successful placer mining in the state;

(2) the capability to produce verifiable results; and

(3) the capability to study and test innovative and economically viable techniques for waste disposal and pollution control in placer mining.

(c) The commissioner of environmental conservation may not make a grant under this section to a person in excess of \$100,000.

(d) The commissioner of environmental conservation shall monitor and evaluate the results of grants made under this section.

Sec. 46.16.090. ACCESS TO INFORMATION. (a) All information generated as a result of grants made under this chapter is public information. The commissioner of natural resources and the commissioner of environmental conservation shall compile, analyze, and distribute the information for the benefit of the placer mining industry and the state and federal governments.

(b) The contents of an application for a grant are available to the extent permitted under AS 09.25.110 and 09.25.120.

Sec. 46.16.100. PATENTS. A person



who applies for a grant under this chapter shall assign to the state the right to patent any patentable process developed as a result of a grant under this chapter. The department making the grant shall seek to patent any patentable process developed as a result of a grant under this chapter. The state shall license without cost to a person engaged in placer mining in the state the right to use in the state a patented process that was developed as a result of a grant under this chapter.

\*Sec. 2. This Act takes effect July 1, 1984.



### DGGSer a 'biker'

Rocky Reifenstuhl is a year-round cyclist. The DGGS geological assistant puts as many miles on his bicycle as some people put on their car. Reifenstuhl, based in Fairbanks, is one of the top cyclists in the state.

Although Rocky has only raced competitively for 2 years, he has enjoyed traveling by bicycle considerably longer. One of his major expeditions included a 1,500-mile trip through Europe.

Rocky, a member of the Fairbanks Cycle Club, competes in as many races as he can. One of his most notable victories this summer was a second-place finish in the Kenai Peninsula race from Girdwood to Homer. The grueling 225-mile race took place over 3 days, which Rocky says he prefers to the shorter races. "They're better because they test the endurance and capabilities of a racer to the fullest," he said.

Rocky doesn't necessarily need the competitiveness of a race situation to test his endurance. At the end of the Geological Society of America conference in Anchorage in June, he rode his bicycle back to Fairbanks (350 miles) in a nonstop 25 hours.

While Reifenstuhl plans to continue his cycling mania, he doesn't

foresee a professional career in it. "I enjoy bicycling because it's something I can do with my entire family. My wife bikes and we have a carrier for our daughter," he said. It's also an excellent way to stay in shape," he added.

In early July, Reifenstuhl finished 11 seconds behind the winner in another bike race, the Denali Classic, a two-weekend affair. He had almost canceled at the last minute because of the pending birth of a second child, but his wife "came through on time," delivering another daughter, 8-lb, 10-oz Kirsten, on June 21.

In other personnel notes, geologist Mary Albanese caught a fish. Big deal, you say? Well, on June 9, she boated a 68-lb king salmon from the Kenai River. In mid-July, Mary and her husband left for Korea, where they picked up their newly adopted daughter, Yvonne. (The fish stayed home to watch the house.)

Also on the DGGS baby front new to the world is Panika Dillon, who weighed 10 lb, 8 oz when she was born on May 18. Panika, which means 'my daughter' in Upik, is the second child of DGGS geologist Mary Moorman and her husband, John Dillon, also a DGGS geologist.

On July 2, DGGS geologist Laurel Burns gave birth to her first child, an 8-lb son, Martin. Laurel's husband, Ranier Newberry, teaches geology at UAF.

Leaving DGGS during the quarter were geological assistant Kathy Goff, clerk-typists Marlys Stroebele and Collette Hernandez in Fairbanks, hydrologist Roger Clay in Eagle River, and data-entry clerk Cindy Olivera, historian Judith Bittner, DP manager Lloyd Eggen, and clerk-typists Nancy Dann and Crystal Burgess of the Anchorage office. Bob Bennett was named acting manager for Eggen.

New faces include chemist Babette Faris, clerk-typist Norma Sizemore (who transferred from the Anchorage

DNR Personnel section), geological assistant Bill Petrik, archaeologists Chuck Holmes (who returned to the DGGGS fold), and J. David McMahon, hydrologist Jennifer East, and administrative officer Bob Jensen, who also transferred from DNR Personnel.

In the marriage department, congratulations are extended to Anchorage clerk-typist Irene Richards (nee Cutts), who was married July 30, and Fairbanks clerk-typist Donna Mursch, who will become Mrs. Lewis Allen on August 25.

In mid-August, student intern Paula Barclay will leave DGGGS to enroll at the University of Missouri, where she was accepted at its prestigious School of Journalism.



**Geologists believes gas causes massive plumes**  
(from Anchorage Times, June 1, 1984)

Massive plumes resembling streams of white smoke, seen rising mysteriously from an uninhabited island, may be methane gas trapped below the ocean floor during the last glacial age, a geologist says.

"We don't really know what it is," Juerger Kienle, a scientist at the Geophysical Institute at the University of Alaska-Fairbanks, said Thursday. "What we need to do is go there and sample, but there is a problem with that."

The problem is that Bennett Island, a 114-square-mile chunk of basalt rock in the East Siberian Sea, is in Soviet territory. Scientists discovered the plumes through satellite photos.

The plumes do not contain any volcanic materials or radioactivity, Kienle told the 80th annual meeting of the Cordilleran Section of the Geological Society of America.

A geologist from the U.S. Geological Survey hypothesized recently that the plumes may be caused by the explosive discharge of methane gas, Kienle said.

Kienle's theory is that large

amounts of natural gas were trapped beneath the permafrost during the last glacial age. Now the permafrost is breaking down as the sea reclaims the area, and the gas is escaping, he said.

The USGS has detected similar plumes underwater in the Bering Sea while studying geologic formations in anticipation of offshore oil and gas lease sales.

Rising as high as 3 miles into the atmosphere and stretching more than 150 miles, the Bennett Island plumes were first detected in 1982 on photographs taken by passing weather satellites. Six were discovered between March 1982 and December 1983 and three more have been spotted since then, including one as recently as April, Kienle said.

The discoveries prompted a review of satellite photos dating back to December 1974, revealing as many as 50 plumes. Sometimes there were dual plumes, usually extending east or northeast from a spot about 9 miles off the island.

"This has really been quite a detective story. The suspects originally were either Mother Nature or Mother Russia" said Kienle, a noted volcanologist.

Kienle said that when he first detected the plumes, he suspected volcanic activity. He sent his data to Soviet scientists, who also thought the plumes must be of volcanic origin, and they sent an expedition to the island. But they told Kienle they were unable to find any ash or cinder cones in the area.

Kienle said the nearest known volcano is more than 600 miles to the south, and the last recorded activity there was in the late 1700s.

Because of the size and the intensity---10 trillion watts---of the plumes, they also attracted the interest of the U.S. military. In a synopsis of Kienle's report, prepared with assistance from G.E. Shaw and Juan Roederer of the Geophysical In-

stitute, the scientists said, "time-limited chemical burns are unlikely to produce such massive high-altitude plumes."

In the Institute's annual research summary, the scientists said, "a man-made origin of these events cannot be fully ruled out. In that case, they would be of substantial strategic significance."



#### DGGS prints Prudhoe Bay Guidebook, new RIs, ICs

DGGS published its fifth permafrost guidebook, four Reports of Investigations, and two new Information Circulars during the quarter.

Guidebook 5, 'Permafrost and related features at Prudhoe Bay, Alaska,' was edited by DGGS geologist Stuart E. Rawlinson. It was originally prepared for the Fourth International Conference on Permafrost, held in Fairbanks a year ago. The information "will be of interest to a less technically oriented audience," said Rawlinson. Guidebook 5 describes the Prudhoe Bay area, its physical setting, climate, area, vegetation, soils, wildlife, and its onshore, offshore, and inland permafrost. GB-5 has 178 pages, including 23 color figures, and sells for \$6.

#### Reports of Investigations

DGGS also published four Reports of Investigations in the past 3 months. Three of the reports pertain to the Sleetmute Quadrangle in southwestern Alaska. The reports profile the rock, pan-concentrate, and stream-sediment geochemistry of the southwestern part of the quadrangle. They are:

.RI 84-7, 'Rock, pan-concentrate and stream-sediment geochemistry, Sleetmute A-6 Quadrangle, Alaska,' by M.S. Robinson (1 sh., scale 1:40,000). \$1.

.RI 84-9, 'Rock, pan-concentrate, and stream-sediment geochemistry, Sleetmute B-5 Quadrangle, Alaska,' by M.S. Robinson (1 sh., scale 1:40,000). \$1.

.RI 84-11, 'Rock, pan-concentrate, and stream-sediment geochemistry, Sleetmute B-6 Quadrangle, Alaska,' by M.S. Robinson (1 sh., scale 1:40,000). \$1.

The fourth new RI is:

.RI 84-15, 'Surficial geologic map of the Seward D-6 Quadrangle, Alaska,' by R.A. Combellick (1 sh., scale 1:63,360). \$1.

#### Information Circulars

DGGS also released two new Information Circulars this quarter. They are:

.IC 29, 'Drilling a water well?'. This is a 12-page circular that provides some guidelines in selecting a driller and also lists registered water-well contractors by region.

.IC 30, 'Alaska Heritage Resources Survey'. This two-page foldout explains the work on Alaska's inventory of documented prehistoric and historic sites. The pamphlet also describes the restrictions of the Alaska Historic Preservation Act. All IC's are free.

As mentioned last issue, a statewide geothermal-resources map is now available through DGGS. The multi-colored map, produced in conjunction with the National Oceanic and Atmospheric Administration (scale 1:2,500,000), is the final product of a 4-year assessment of Alaska's geothermal resources. (Also still available is DGGS Special Report 33, 'Alaska's Mineral Industry - 1983.')

The work included reconnaissance

mal-spring and fumarole temperature and flow rates, and geochemical sampling of thermal waters of over 100 thermal-spring sites and fumarole fields. The map, formally called 'Geothermal resources of Alaska,' sells for \$5 and is available for inspection and purchase at all DNR mining-information offices. Mail orders should be sent to the DGGS Fairbanks office (p. 1).



**Miners, state battle over access across preserve**  
(from Anchorage Daily News, July 21, 1984)

Gold miner Joe Vogler vowed Friday he would not apply for permits the National Park Service says he needs to move heavy equipment across the 1.7 million-acre Yukon-Charley River National Preserve to his mining claims.

And Fairbanks miners on Friday blamed state officials for many of the problems now facing Vogler.

"We don't have to have a permit to drive down the road. It's going to be a hot issue. I think it's something we're going to have to take a strong stand on," said Roger Burggraf, president of the Alaska Miners Association.

U.S. District Judge James Fitzgerald earlier granted a preliminary injunction requested by the National Park Service that halted two pieces of heavy equipment Vogler had been moving across the preserve.

The government claimed the equipment was being driven along a path off a winter trail, causing extensive damage to the environment. Vogler claims the trail is a mining trail and has been in use for decades. He also claimed access to mining claims is guaranteed by federal law.

The Park Service argued that an access permit and a required plan of mining operation are reasonable regulations under the Alaska National Interest Lands Conservation Act of 1980.

"There's a hell of a lot of difference between reasonable in their eyes and access to mining in my eyes," said Vogler, twice the Alaskan Inde-

pendence Party candidate for governor. "I told the judge I either have property rights or I didn't, and I didn't want the government for a partner."

Fitzgerald's decision effectively stopped the equipment about 18 miles within the preserve. It also served to block Vogler's mining of his unpatented claims in the preserve until he submits an operations plan.

Burggraf said state officials have failed to respond to miners' pleas to formally designate historic mining trails so that they would be protected under federal law.

During a meeting of the association's Fairbanks chapter Friday, miners said the designation of a pathway as a mining trail should be interpreted to mean no permit requirements, and that such trails should be treated as corridors rather than a defined width.



**Kuskokwim village mayor pushes fight with mining firm**

(from Fairbanks Daily News-Miner, June 28, 1984)

When Anna Phillip took over as mayor of Tuluksak in November of 1983, she was already deeply involved in a growing battle between her village and a mining company operating 40 miles upriver.

Tuluksak---a Yupik Eskimo community of just over 300---lies 50 air miles northeast of Bethel on the Tuluksak River, a mile upstream from the Kuskokwim River.

For just more than a year, Phillip and her village have been opposing mining activity by the Northland Gold Dredging Co. 40 air miles upriver at Nyak, after residents discovered excess silt in the water flowing past their community in June of 1983. Local claims are that the mining is damaging subsistence---especially the salmon resource---and making the water in the river unfit to drink.

"It seems that this gold, a mineral," Phillip said, "is more im-

portant than the people."

The village in effect stopped the mining this past year, but after a series of public hearings with both the company and a number of government agencies, the state issued a permit to Northland to resume operations under strict regulations.

"We feel we've gone out of our way to address these environmental problems," said Joe Fisher, Northland's project manager.

Nevertheless, Phillip is concerned that Northland's track record is none too promising.

"The state doesn't look back at when Northland polluted the river last year. That's the past. It's gone. I don't like that," she said. "When the permit was finally given to the company, the people in the village were upset. It was like losing something. It was really upsetting, losing your protection."

Fisher admits that the company made no attempt to inform the village of their intentions prior to resuming mining after an almost two-decade lay-off, but it certainly didn't anticipate the village's strong reaction.

"We didn't think there's be a problem because of the past history," said Fisher, explaining that the area above Tuluksak was mined from 1926 to 1964, and that his company resumed the mining there in 1981. In addition, he said that although Tuluksak is 40 air miles from the mining operation at Nyak, it is 70 to 80 miles by river ---so that much of the silting is more the natural turbidity of the river than the mining operation.

Phillip said that Northland does not employ any local people in the surrounding villages, it pays no local taxes, and that the miners live in Anchorage and fly in only during the summer months to mine.

"We have not had the people request jobs," Fisher said. "Part of the problem in recent years has been that the Natives have not been interested in that type of work."

Fisher further indicated that of the 20 seasonal employees the company employs, one resident from Akiak---a village close to Tuluksak---works in their powerhouse and others from Bethel also work for the company. Additionally, he said that Northland probably spent \$250,000 in the local economy in 1982 alone.

The issue has received considerable statewide media coverage, to the point that people recognize Phillip when she's traveling out of town.

"In Anchorage, when we mention the work 'Tuluksak,' people say, 'keep it up, we're for you.' That has been really surprising. It makes me feel good that there's concerned people out there."

Fisher said outsiders are part of the problem.

"Because of outsiders," he said, "we have never been able to sit down with the village and resolve the question. We feel we've gone out of our way to address these environmental problems. We'd like to be good neighbors and be a part of the community."

"I always have to be careful with what I'm saying," she said. "I don't want the village or the people to be hurt. I've learned a lot. There are days when I say to myself, 'what am I doing?' but somebody has to do it."

At 26, Phillip has lived with her parents most of her life, except for a brief stint Outside to study psychology at Seattle Pacific University. She has nine brothers and sisters. "We're a real close family," she said, adding that her parents have encouraged her in local politics.

"I guess they like it. They help me. They give me a lot of feedback and advice," she said.

Yupik is Phillip's first language, as it is for the rest of the village. She said the Native language and traditions remain strong in the Bethel region, including the role of the elders as spiritual and political advisors, who have continuously guided the village's unanimous sentiments

since this past year's upheaval: "The elders want no mining. Period."

Phillip seems to have learned the quiet, nonaggressive strategy necessary for survival as a village leader, but explains it in a different way: "At public meetings in Tuluksak, officials from out of town think I'm quiet. But I want the people's feelings heard to the officials. That's why I always just sit back and listen at the meetings."

How does Phillip feel overall about being mayor?

"It's a hard job," she said.



### Our Ganguer....

By Frank Larson, editor

How much gear do you take to the field? It varies. Some geologists are thorough and prepare for every contingency. One DGGGS veteran said that geologists probably take more gear than is needed, certainly more than the average backpacker....Others lead a spartan existence in the field. One such was former DGGGS mining engineer Cleland Conwell. For trips to southeastern Alaska, Cle used to take grease, a frying pan, and fishing tackle. Period...But my favorite example of innovations in ascetic living in the field is provided every summer by my good friend Slade. Slade has a few idiosyncracies. He doesn't like jeans. ("Too tight," he says.) He wears slacks instead. Slade doesn't like down vests. ("Too warm.") Instead, he wears suit vests. ("I like the extra pockets.")....Slade prepares for the field each summer by going on a shopping spree---but not at your usual outfitters. No Eddie Bauer or L.L. Bean togs for Ol' Slade. No sir....Slade, you see, dresses for the field. Slade wears a suit to the field. Yes, a regular Sunday-go-to-church-style suit....He buys a new suit every year, just for the field---but not just any suit, mind you. Certain requisites have to be met. First off, the suit must have, to

paraphrase former Secretary of Agriculture Earl Butz, loose pants. It must also have a vest. It must fit reasonably well. (Color and style? Minor details. Slade, you see, is a Fairbanksan.) Mostly, though, the suit must not be too expensive. It must not cost more than, say, \$15....Slade, the gentleman DGGGS ragpicker (oops) rock-picker, selects his spring ensemble off the rack at a 'store-front' department store---the Salvation Army, the Humane Society, the Bishop's Attic ("No credit, no alterations")....Every spring, I accompany him on his shopping trips, for he relies on my patrician taste and innate sense of style to guide him in his quest for sartorial perfection....No pleats for my friend. No Nehru jackets. No leisure suits. Nosirree. My Man has to go to the bush in style...."Are cuffs 'in' this year?" he asks. "Sure," I reply, "wide lapels, too." (Well, they were, last time I got dressed up---to get married; my daughter is now a high-school senior.)....Anyhow, after painstaking deliberation, Slade selects his summer ensemble, pays for it, and departs, suit in arm (actually, in a paper bag)...Then, about June 15, he arises, dons the suit, kisses the wife and kids good-bye, and heads for work like millions of other nattily attired American males. But with a difference: Slade's 'work' is in the central Alaska bush. There, for the next month or two, the luckier local denizens may catch occasional glimpses of Slade the Impeccable, sartorially correct in his matching three-piece suit as he traverses mountains, ravines, and streams, pockets bulging with rock samples and sodden bags of river muck....Wearing a suit to the field has many advantages, the veteran rock-picker avows. "First, it has lots of pockets. Second, it has a vest. Third, it is comfortable, not too tight. Fourth is style, of course. I always like to look my best around a smoky campfire. A fifth advantage is laundry. There is none." He continues,

"There is only one drawback to the no-laundry solution, though." He pauses, wistfully. "It concerns my friends. You see, I usually lose them after the first week or so."....What does he do when he gets back to town, you ask? "Ahhh, that's the best part," Slade says. "I take the suit off," he says. "Then I have a party and burn it." Brooks Brothers, eat your hearts out....The Alaska Miners Association will hold its ninth annual convention and trade show November 1-3 at the new Egan Convention Center in Anchorage. Space for displays is available though Sandi Thomas, Rainbow Resources Labs, 5331 Arctic Blvd, Anchorage 99502 (ph 561-1017)....Ten tracts of state-owned land in the Matanuska Valley's Wishbone Hill area with 'moderate to high' potential (13,760 acres, total) may be offered for sale this December. DNR has scheduled hearings to allow public comment on the proposed offerings, the first of three for the Matanuska field over the new 4 yr. For further info, contact Laurel Murphy (DOM, Pouch 7-016, Anchorage 99510, ph 265-4191)....The DNR Division of Parks received more than \$0.5 million to stabilize and restore old buildings at Independence Mine State Historic Park. The mine, which sits on 271 acres of land and has numerous old buildings, including a 1940-era assay office, and has 21 miles of tunnels....Is the secretary of Anaconda Minerals' Dave Heatwole a fan of writer John Irving? Could be. A letter from Heatwole to DGGs geologist Gar Pessel was addressed to "Garp Sell."....Residents of the Marine View Apartments in Juneau have been told to move because two studies have found that the 10-year-old building would be unsafe in an earthquake. We'll have more on this next issue, along with the fate (and new address) of the DGGs Juneau office, which is located on the fourth floor of the nine-story building....The Ketchikan Gateway Borough wants to annex the Quartz Hill molybdenum site to increase its tax base. U.S. Borax objects. Also, a public

hearing on the recently released EIS on the proposed mine is set for Sept. 6. Stay tuned....Silverado Mines, Ltd. is plowing \$5 million into the Grant Mine (p. 4) on drilling, underground development, construction, and a mill. It hopes to resume operations at a 200-tpd clip next fall. Recent drilling turned up gold contents of 0.7 to 2.7 oz/ton ore at depths between 100 and 200 ft....The Cook Inlet Region, Inc., wants to mine gravel on land it owns in Kachemak Bay State Park. CIRI, which wants to extract 9 million ft<sup>3</sup> of gravel from the abandoned bed of the Doroshin River, hopes to begin barging gravel to Homer later this year. However, Division of Parks director Neil Johannsen said that the chance of the Native Corporation getting the necessary permits "is slim."....Resource Associates of Alaska signed a joint-venture agreement with Freeport Exploration of Reno, Nevada to explore for gold and other minerals on the central Alaska Peninsula. Freeport will conduct an exploration program on land held by RAA under a mineral agreement with the Aleut Native Corporation....The List of USGS Geologic and Water-Supply Reports and Maps for Alaska states that Helen Beikman's Miscellaneous Field Studies Map MF-673, 'Preliminary geologic map of southeastern Alaska,' has a scale of 1:1,000,001. Now that's finite mapping....DGGs is getting ready for its annual update of Information Circular 8, 'Consultants available for work in Alaska.' So, you consultants, both Alaskan and Outside, drop us a line and state your address and services offered. We'll add it in the next version....If you wanted to bid on the nine parcels of 17 terminated Alaskan oil leases, you'd have had to go to (select one): a) Anchorage, b) Fairbanks, c) Juneau, or d) Cheyenne, Wyoming. The answer, of course, is d. (But there is no truth to the rumor that the BLM will hold the next Simultaneous Oil and Gas Lease Program for Alaska land in Yazoo City, Mississippi.).....Cheers.



## Metals Market

|                                     | <u>July 9, 1984)</u> | <u>3 Months Ago<br/>(4/2/84)</u> | <u>1 Year Ago<br/>(7/11/84)</u> |
|-------------------------------------|----------------------|----------------------------------|---------------------------------|
| Antimony metal per lb (NY dealer)   | \$ 1.54              | \$ 1.55                          | \$ 0.80                         |
| Beryllium ore, stu*                 | \$100-120            | \$100-120                        | \$110-135                       |
| Chrome ore per long ton (Transvaal) | \$ 48-52             | \$ 48-52                         | \$ 48-52                        |
| Copper per lb (MW-prod)             | \$ 0.66              | \$ 0.78                          | \$ 0.82                         |
| Gold per oz (Handy & Harman)        | \$ 364.10            | \$ 388.15                        | \$ 415.16                       |
| Lead per lb                         | \$ 0.31              | \$ 0.25                          | \$ 0.20                         |
| Mercury per 76-lb flask             | \$ 318.00            | \$ 317.00                        | \$ 278.00                       |
| Molybdenum conc. per lb (MW oxide)  | \$ **                | \$ 3.85                          | \$ **                           |
| Nickel per lb (cathode)             | \$ 2.25              | \$ 2.29                          | \$ 3.20                         |
| Platinum per oz (MW NY dlr)         | \$ 360.00            | \$ 393.00                        | \$ 428.15                       |
| Silver per oz (Handy & Harmon)      | \$ 7.95              | \$ 9.57                          | \$ 11.55                        |
| Tin per lb (MW composite)           | \$ 6.33              | \$ 6.35                          | \$ 6.99                         |
| Titanium ore per ton (ilmenite)     | \$ 70-75             | \$ 70-75                         | \$ 70-75                        |
| Tungsten per unit (GSA domestic)    | \$ 80.74             | \$ 71.77                         | \$ 99.60                        |
| Zinc per lb (MW-US PW)              | \$ 0.50              | \$ 0.53                          | \$ 0.40                         |

\* - Standard ton unit (20 lb).

\*\* - Climax-concentrate list price suspended.

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