STATE OF ALASKA

Department of Natural Resources

Division of Geological & Geophysical Surveys

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IN THIS ISSUE

**Mining-information office +Publications office*

DGGS staff compiles overview of 1982 minerals activity in Alaska

(from Mining Engineering, May 1983)

(Chief mining geologist Gil Eakins and several other members of the DGGS Minerals Resources section compiled the following summary for the May 1982 issue of Mining Engineering, a publication of the American Institute of Mining Engineering.--Ed. note).

The severe economic recession caused mining companies to curtail exploration activities in Alaska during 1982. Although development expenditures increased 68 percent to $41.6 million last year, exploration expenditures dropped 41 percent to $45 million, down from $76 million in 1981. Total 1982 expenditures for all segments of the minerals industry---exploration, development, and production---were $283 million, down from an adjusted $291 million in 1981.

Exploration results have shown that stratiform massive-sulfide deposits in the Alaska Range resemble the large base-metal deposits in the Ambler district in the Brooks Range. Southwestern Alaska, which previously has seen little activity, had high levels of exploration and claim staking. Interest in tungsten and precious metals in the Yukon-Tanana Upland is very high, and government and industry efforts to determine statewide coal resources continued.

Company Activities

Many companies conducted exploration programs in Alaska last year. Here are a few highlights.

Cominco American concentrated on the giant Red Dog lead-zinc-silver deposit in the western Brooks Range, where test drilling indicates the presence of 85 million tons of mineralization containing 17.1 percent zinc, 5 percent lead, and 2.4 oz/ton silver in deposits amenable to open-pit mining.

Sunshine Mining, one of the principal companies with interests in the Ambler district in the Brooks Range, conducted a reduced exploration program in the area during 1982. GCO Minerals and Houston International Minerals continued work on the Lik

deposit. Cominco explored the Sue deposit in the De Long Mountains. Anaconda Minerals continued its northern Alaska base- and precious-metal exploration program in the Ambler district. Anaconda also searched for tin, chromium, and platinum-group metals in other areas of northern and western Alaska.

Bear Creek Mining, another principal claim holder in the Ambler district, continued assessment work and exploration on several major copper-zinc-lead-silver deposits in the region. Its holdings include the Arctic and Ruby Creek (Bornite) deposits. Published reserves of the Arctic deposit are 40 million tons averaging 4 percent copper, 5.5 percent zinc, 1 percent lead, 1.6 oz/ton silver, and 0.02 oz/ton gold. Exploration during 1982 consisted of geologic mapping, geochemical and electromagnetic surveying, claim surveying, and diamond drilling on various properties.

Evaluation of gold lodes in the Fairbanks-Cleary district is continuing. Placid continued to evaluate its large claim block in the Cleary area north of Fairbanks by drilling and underground sampling. A Fairbanks partnership, Alaska Mineral Services, drilled lode gold claims on Cleary Summit. Mohawk Resources Alaska, headquartered in Fairbanks, prospected and staked in the Cleary area.

A 35-man crew from Resource Associates of Alaska, in a joint venture with Teton Exploration, drilled and explored a copper, gold, and silver skarn at Zackly in the Mt. Hayes Quadrangle in the Alaska Range.

Alaska Asbestos, a joint venture project between Tanana Asbestos and GCO Minerals, was organized to explore, evaluate, and develop an asbestos deposit near Eagle. Four deposits have been located. Drill data indicate reserves of 61 million tons of ore averaging 5-6 percent asbestos fiber. The potential exists for additional large tonnages of similar-grade ore. Fiber quality ranges from 4A through 7D, Quebec Standard Specification. During 1982, large-diameter (12-in.) drills were used to provide core samples for laboratory testing. About $14 million was spent on exploration and development. Estimated capital required to bring the deposits into production range from $120 million to $150 million.

Reserves

Reserve estimates at a significant base- and precious-metal deposit discovered in 1977 at Greens Creek, located 18 miles southwest of Juneau, were revised last year. Reserves are now estimated at 3.5 million tons grading 10 percent combined zinc, lead, and copper; 12 oz/ton silver; and 0.16 oz/ton gold. The initial discovery was made by Pan Sound Joint Ventures, a group composed of Marietta Resources International, Exalas Resources, Texas Gulf Resources, and Noranda. The proposed mine plan involves an 800-ton/day underground operation using the cut-and-fill mining method. Startup is planned for 1987.

Deposits in the Bohemia Basin of Yakobi Island contain one of the few proven reserves of sulfide-nickel mineralization in the U.S. In 1982, Inspiration Development returned the property to Aleco, citing adverse economic conditions. The deposits contain 80,000 tons nickel, 40,000 tons copper, and 4,000 tons cobalt in 20 million tons of drilled reserves.

On the basis of more than 250,000 ft of diamond core drilling through 1982, U.S. Borax estimates that its Quartz Hill deposit, 45 miles east of Ketchikan, contains more than 1.5 billion tons of minable ore grading 0.136 percent molybdenite. This figure includes 300 million tons of near-surface ore grading better than 0.2 percent molybdenite. In July 1982, the U.S. Forest Service issued a final EIS for access-road construction and

bulk sampling. In August, construction began on the 9.5-mile road needed to move a 5,000-ton sample for metallurgical testing from the Quartz Hill mine site to tidewater at Wilson Arm. Plant construction is expected to begin in mid-1984, with operation commencing in late 1987. Quartz Hill is one of the world's largest known molybdenum deposits.

For the first time in the state's history, development-project expenditures approached the expenditures for exploration. This is not only because of the recession, which caused exploration expenditures to drop; it also reflects major companies' decisions to proceed toward production of specific mineral deposits.

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DGGS Anchorage office moves to Frontier Building

The Anchorage office of DGGS moved June 12 to their new quarters on the eighth floor of the Frontier Building, in midtown Anchorage. The street address for the building is 3601 C Street. The mailing address remains the same: Pouch 7-028, Anchorage 99510. The new phone number is 276-2653.

When other divisions of the Department of Natural Resources were moved in November from the McKay Annex on 4th Avenue to the Frontier Building, former DNR Commission John Katz decided to move DGGS also. DNR now leases three floors of the Frontier Building. The eighth floor is shared by DGGS and the Division of Forestry; the ninth and tenth floors are used by the Divisions of Technical Services and Land and Water Management. The DGGS Mining Information Office is located next to the DNR Public Information Office on the tenth floor.

About 50 DGGS employees were moved. The data-processing and petroleum-resources sections were moved in mid-July. The hydrology section, based in Eagle River, was not affected by the move.

The new office accommodates several specialized functions of DGGS. A climate-controlled area was built specifically for the Data General computer used by the petroleum-resources section, which also required a confidential area in which to store sensitive data. An archaeology and geology lab was also built.

The 14-story Frontier Building, one of a half-dozen glass-and-steel edifices built in midtown Anchorage over the past 2 years, is a short drive from International Airport.

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'Young' skull 15,090 years old at UAF

(from Fairbanks Daily News-Miner, May 26, 1983)

With tusks intact, the skull of a 15,090-year-old mammoth was delivered last week to the University of Alaska Museum in Fairbanks.

"This is a very significant find," said Robert Thorson, a University of Alaska-Fairbanks assistant professor of glacial and Pleistocene geology.

"Carbon 14 dating of part of the mammoth's vertebrae has placed its age at 15,090, plus or minus 170 years. It is one of the younger known mammoths to be discovered in Alaska," said Thorson.

During a mining operation last summer the mammoth tusks began to protrude from the muck of a creek northwest of McGrath.

Mine owners Toivo Rosander, a Finn who has been in Alaska since 1932, and his son, Ron, contacted university museum personnel late last summer. The Rosander family has donated the mammoth's skeleton to the museum for exhibit and will allow a museum crew to return in June to further excavate the site.

"We will be able to get much information from the pollen, plant and insect remains at the site. This will help us to reconstruct the Pleistocene environment in that area as it existed 15,000 years ago, when this mammoth roamed the earth," Thorson said.

Before freezeup, Dale Guthrie, a University of Alaska-Fairbanks professor of zoology, and Gary Selinger and Steve MacDonald of the museum, along with some miners, wrapped plaster around the skull and tusks for support. Then they needed a way to get the 8-foot-long, and 8-foot-wide mammoth remains to Fairbanks.

That chance came last week when a State Geological and Geophysical Surveys backhaul flight stopped at the Rosander mine to pick up the mammoth. A sky van flown by Delta Aviation had completed a fuel run to a nearby DGGS survey camp for Tom Bundtzen, a geologist with the State Survey, and was returning to Fairbanks empty except for the mammoth.

"There is a reasonably good chance of recovering more skeletal material. We already have some vertebrae and smaller bones," said Selinger, a museum technician and Pleistocene bone specialist.

"The mammoth is pretty much as it was when it died 15,090 years ago. The skeleton has not been redeposited or moved," Selinger said.

From the bones already recovered, evidence of carnivore gnawing was detected. Since the animal died in a treeless, relatively barren area, its bodily was easily spotted from long distances, thus attracting carnivores.

The chance of finding cultural or man-made material in association with the mammoth is an idea which excites the researchers.

"If we do, it would be a find in Alaska for anything this old," said Guthrie.

(As the 'Mines & Geology' went to press, Bundtzen said that Rosander had discovered the remains of a second mammoth. -- Ed. note.)

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"Finding of fossils enables the scientist to determine the age of the fossil and also the age of the hostess rock."--Geotimes.

Mining activity increases but is still below normal

The amount of mining activity for this past quarter is again below normal, even though the number of claims recorded increased by almost 90 percent. Claims filed for January through March totaled only 1,160. This quarter's total was 2,188.

This is the lowest number of claims recorded for this time of year since 1979. Over 4,500 claims have been filed in the second quarter of each year since then. Mining-information specialist Mildred Brown said she expects activity to pick up by September, but still remain below normal levels. No large companies have been in to file claims, she said.

Mining activity was heaviest in the Fairbanks district this past quarter, followed by the Nulato, Kuskokwim, and Talkeetna areas.

The claims by recording district are:

	Apr.	May	June
Fairbanks	423	144	285
Barrow	0	0	10
Nulato	12	237	50
Mt. McKinley	0	11	1
Nenana	1	12	23
Ft. Gibbon	0	36	0
Kotzebue	1	8	0
Talkeetna	12	56	143
Palmer	2	41	20
Nome	8	63	43
Seward	12	33	53
Juneau	30	0	0
Haines	0	4	0
Petersburg	0	0	15
Ketchikan	1	26	25
Anchorage	0	0	1
Aleutian Is.	0	0	10
Cordova	0	4	6
Chitina	0	7	20
Valdez	0	0	1
Kuskokwim	0	288	10
Totals	502	970	716

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DGGS issues 14 more maps on mining-claim status

Fourteen more maps have been released in the new DGGS quadrangle-map series that will eventually document the complete history of mining-claim activity in Alaska. This brings the total number of maps published to 27.

For each quadrangle there are two status maps: a U.S. Bureau of Mines map showing claims---active or inactive---or mineral locations from 1900 through 1979, and a DGGS map containing the same information from 1980 through 1982. Also included is a reference sheet that shows the location of the maps, the number of claims, and the years of mining activity.

The 1:250,000-scale quadrangles are:

De Long Mountains	Fairbanks
Chandler Lake	Big Delta
Phillip Smith Mts.	Eagle
Wiseman	Ophir
Chandalar	Medfra
Bettles	Healy
Beaver	Mt. Hayes
Bendeleben	Talkeetna
Tanana	Talkeetna Mts.
Livengood	Anchorage
Circle	Juneau
Charley River	Craig
Nome	Ketchikan
Ruby	

Further information on claim name, 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 DGGS mining-information offices in Anchorage and College. They sell for $2.

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"Beginning in the winter of 1938 Dr. Ewing and his associates, working on the deep-sea research vessel Atlantis, began to experiment with underwear photography."--Geological Howlers.

Reuben Kachadoorian

U.S. Geological Survey engineering geologist Reuben Kachadoorian, known for his work in Alaska, died June 30 at Kaiser Hospital in Santa Clara, Calif., after a losing bout with cancer. He was 62.

At the time of his death, Kachadoorian was geologist-in-charge of the Branch of Alaskan Geology at the Geological Survey's Western Region headquarters in Menlo Park.

Kachadoorian worked on a wide variety of projects in Alaska during the past 30 years, including engineering geology studies of the Denali Highway, the Cape Lisburne area, the route of the Trans-Alaska Pipeline System, the Devil's Canyon Dam site on the Susitna River, and Pillar Mountain near Kodiak.

She plans to tap volcanic steam to grow tomatoes

(from Anchorage Daily News, May 19, 1983)

The lone bidder in Alaska's first geothermal lease sale says she will use steam from the Mount Spurr volcano to grow lettuce, cucumbers, and tomatoes for state markets.

Susan Tierney Dilley, 25, of Wasilla, bid $7,000 Tuesday for 640 acres on the southern flank of the glaciated volcano, which last erupted in 1953. She said she and her husband, Glenn, have plans for growing vegetables hydroponically, or without soil, in water-soluble mineral solutions.

"I did not expect it at all," she said. "I didn't think I had a chance."

Because she was the only bidder, she could have gotten the lease for substantially less than the $10.94 an acre she paid. The 16 geothermal leases on 10,240 acres about 80 miles

west of Anchorage carried a minimum bid of $1 an acre.

"I could kick myself in the pants for not bidding $1," she said.

Meanwhile, state officials, who had anticipated bids from people wanting to operate a steam electricity generating plant, said they are unsure how much energy is available in the geothermal area.

But Department of Natural Resources officials think there is enough for a hydroponic farm.

If Dilley's 10-year lease is approved, she will pay the state a fixed royalty of 10 percent of the gross revenues from energy production. The annual rent of $3 an acre can be credited against royalties.

Dilley said it probably will be four or five years before the vegetable business gets going. The couple's goal for this year is to get an airstrip and road built on the site, about 40 miles west of Tyonek.

Eventually, she said the couple hopes to live on the site and fly their vegetables to market.

"We're quite sure there is a great market for it," she said.

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Miners, EPA have their day

(from Fairbanks Daily News-Miner, June 2, 1983)

Alaska placer miners say new federal requirements will turn law-abiding citizens into lawbreakers, but the Environmental Protection Agency believes miners can and should be able to meet their new requirements.

A meeting Wednesday evening at Schaible Auditorium on the University of Alaska campus drew about 250 people, mostly miners, in a heated session that stretched for 6 hours, until midnight. More than 50 people spoke, with the crowd frequently breaking into cheers, jeers, and applause.

Four EPA officials, three from Seattle and one from Juneau, were on hand to hear the miners' comments on EPA plans to require placer operators to hold National Environmental Pollution Discharge System permits for this year and to meet monthly averages and daily limits on settleable solids and turbidity in streams and rivers.

The permit is the same as required of sewage treatment plants and industrial operations that discharge wastewater. There are fines and imprisonment specified for violations.

Miners would be required to shut down operations 3 days each week to do the required testing.

Old-timers cited mining's contribution to the development of the territory and state, and many said the industry is already overregulated by the state and EPA.

Two environmental spokesmen and the president of Tanana Chiefs Conference spoke in favor of the requirements.

The mass turnout was the result of an intensive campaign by mining-association leaders. "The timing of this meeting is extremely inappropriate," said Roger Burggraf to a round of applause. "This is probably a good million-dollar meeting." Miners are out in the field and many went to great expense to be in Fairbanks for the meeting, besides disrupting their operations.

At the start, EPA officials were chided for giving conflicting dates for written comments to be made. The deadline was set for June 15 rather than June 10, despite protests that many in remote sites who receive mail perhaps one or two times a month would be shut out of the comment process.

Speaker after speaker pointed to the inability of small placer operators to meet the settleable solids required even with use of settling ponds.

Helen Walker's mining site was used by the state for a demonstration settling pond. "We have a history of participating with government agencies," she said. The pond was designed by the Alaska Department of Environmental Conservation and the EPA using "the best technology at the

moment," and even then could not meet the requirements. Another speaker said the pond failed the requirements 40 percent of the time.

Chief arguments by miners were:

a) The EPA has conducted only one season of fieldwork, and its own sampling shows averages higher than its proposed requirements on settleable solids.

b) Miners who are trying to comply will only become frustrated with inability to meet the federal limits and will stop their efforts.

c) The EPA has not determined the best technology for placer-mining operations to meet its stringent requirements.

d) Miners will be forced to keep records that may be self-incriminating and violate their Fifth Amendment rights.

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Bad weather obscures volcano's eruption

(from New York Times, July 12, 1983)

Because of bad weather on the Alaska Peninsula and in the Aleutians, Mount Veniaminof, on the peninsula, has erupted largely unseen.

Betsy Yount, a geologist in the U.S. Geologic Survey's office in Anchorage, said the first official report came June 4 when a pilot reported encountering volcanic ash at 12,000 feet. Some of the 100 residents of Perryville, a peninsular fishing village 16 miles south of the 8,225-foot-high volcano, said they knew something was happening June 2 but could not see the mountain through rain and fog.

A chain of volcanoes begins with Mount Spurr, 40 miles west of Anchorage, on the mainland, and continues out along the peninsula and across the Aleutians. The volcanoes are stimulated by the movement of geological plates on the Pacific Ocean floor.

Mount Spurr erupted in 1958. In 1976 an eruption on Augustine Island threw up an ash cloud that showered Anchorage, 200 miles away. Mount Veniaminof's eruption is of more than passing interest to geologists because it could provide a chance to study the interaction of the lava and the ice mass that fills the 5-mile-wide crater.

Yount said no property was in danger except in Perryville, which is protected from runoff of melting mountain ice by a river valley and low hills.

One telephone in Perryville can make contact with a communications satellite. For 7 months Jo Rutledge, 19 years old, an Athbascan Indian from Wasilla, 30 miles north-northeast of Anchorage, has been using her CB radio to relay messages taken on the phone to Perryville, most of whose residents are Aleuts who pay her to mind the phone.

"A lot of people were out fishing when it happened," she said of the eruption. "Pretty soon a lot of others left to join them on the boats. It got down to 15 people still here. Once in a while I got a little scared."

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Federal funds could finance Alaska mine reclamation

(from Anchorage Daily News, June 4, 1983)

The state is proposing a program to reclaim abandoned mine lands, which should make it eligible to receive about $700,000 in federal funds earmarked for reclamation.

The Department of Natural Resources has identified 224 abandoned mine sites that might be eligible for reclamation.

"Most of them are real tiny sites," said Laurel Murphy, minerals adjudication manager in the Division of Minerals and Energy Management. "They're all over the state."

The program is designed to promote reclamation of areas that were mined and abandoned before passage of the federal Surface Mining Control and

Reclamation Act of 1977. Top priority will go to abandoned mine sites that present a hazard to public health or safety, continue to degrade the environment or prevent other uses of land or water. Lands mined for coal will have priority over lands mined for other minerals.

The program and proposed regulations to accompany it would allow the Department of Natural Resources to enter private property to investigate the need for reclamation and to perform reclamation work. The Department also would have the authority to buy, manage, and resell property that needs reclamation.

After the state finalizes its reclamation program and regulations, they will be submitted to the Interior Department for approval.

If the Interior Department approves the program, the state will be eligible to collect money from a federal fund established in 1977 for reclamation of abandoned mine lands.

Since 1977, coal operators nationwide have been required to pay a fee, based on tonnage mined, to the federal reclamation fund. When Alaska's reclamation program is approved, the state will be entitled to at least one-half the money paid into the federal fund by Alaska coal operators since 1977. That amounts to about $700,000, Murphy said.

If the level of coal mining in Alaska increases dramatically, so will money for reclamation.

In addition to reclamation, the state may use its program to do research on reclamation.

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Three gained for three lost

Three of the DGGS College clerical staff have left but their positions have been filled by three new faces.

Hired as to replace clerk-typist Jean Bird is lifelong Alaskan Doris Isaacson, who previously worked as a dispatcher for the Fairbanks Police Department. Her husband, Randy, works for Yukon Office Supply. Doris, who grew up in Juneau, likes the outdoors and enjoys camping, swimming, and sunbathing.

Replacing Linda Wheeler as clerk-typist is Marleyne Gesin, a 30-year Fairbanks resident and graduate of Monroe High School. Gesin is married and has four children. Marleyne's hobby is art. She painted the mural on the old Arctic Pancake House building in downtown Fairbanks before it was razed in June.

Linn Heilig replaced clerk-typist Bruce Baldwin, who left the state to attend graduate school. A native of Illinois, Heilig came to DGGS from Anchorage. Linn, a 4-yr Alaskan, likes fishing and hunting and is engaged to be married.

In May, Dick and Valerie Reger became the proud parents of a 20-month-old girl from the Chechon Children's Home in South Korea. Melina Kay Reger was adopted through the Washington Association of Concerned Adoptive Parents, which deals mainly with homeless Korean children. Dick, a DGGS geologist, said it took about 8 months of red tape and $4,000 in various fees, but definitely thinks the new addition is worth it. Since her arrival, Melina has learned to walk, talk (English), and play with her two new brothers, Larry, 12, and Tom, 10.

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DGGS conducts local mines tour

On July 7, DGGS geologist Larry Lueck conducted a tour of five mines in the Fairbanks area for several state employees.

The primary purpose of the tour was to give state employees who work in minerals-related capacities a firsthand look at several kinds of mining activities.

The first site visited was a placer operation in Fox, owned and run

by Alice Ebenal and Harold Ellingson of EVECO, Inc. The mine, which has the approval of the Department of Environmental Conservation (DEC), features a double trommel and several conveyors. It does not discharge water into any stream. The mine sells gravel and stone of two different grades, with gold being an important by-product.

The second stop was at the Alaska Mineral Services site, located on Fairbanks Creek off Cleary Summit. The operation consists of a sophisticated closed-system mill with flotation and cyanidation. It will soon begin working about 4 years' worth of tailings from the old McCarty Mine, a high-grade lode-gold property now held by Placid Oil. Gold is the main product, with byproduct values of lead, zinc, silver, and tungsten. Scott Haskins is in charge of the mill.

Casey Patton, who mines the claims of Russell Williams near the Gilmore Creek Tracking Station, was visited next. He has a well-run placer operation with a giant-powered wash plant and sluice box. Patton has four settling ponds in series and always builds new ones as he moves upstream.

Mark Hall of Mohawk Oil runs a placer and bedrock mine on claims at Steamboat Creek leased from Don Rowley. This operation is very sophisticated in its assessment, planning, and measuring of material removal and disposal. Fine tailings are separated for further treatment and concentration.

The last site visited was the Silver Fox Mine, owned and operated by Tury Anderson until 1981, when he donated it to the University of Alaska-Fairbanks. Mining-engineering students, led by UAF senior Doug Nicholson, now use the site to learn underground mining techniques. Ore from the mine is used in UAF mining and geology lab classes.

About 10 employees from three DNR divisions (DGGS, Minerals and Energy Management, and Lands and Water Management) and DEC went on the 1-day tour.

DGGS thanks the miners for their hospitality and friendly explanations. Lueck may organize a similar trip later in the season.

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DGGS Fairbanks office has new address

You probably didn't notice on page 1, but the address for the DGGS Fairbanks office is no longer the familiar 'P.O. Box 80007, College 99708.' Instead, our mail is now being delivered to our door every day by the post office.

When writing for mining information, publications, or simply sending past-due bills, write to:

Alaska DGGS
794 University Ave.
(Basement)
Fairbanks, AK 99701

Be sure to specify 'basement.' That will ensure that your mail gets to us and not our landlord, the Bank of the North, which occupies the main floor of 794 University Avenue.

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DGGS starts Guidebook series

DGGS has compiled a new series of publications, a collection of international guidebooks describing areas of special interest in the northwestern regions of North America, particularly Alaska and Canada. The first four guidebooks were written in conjunction with the Fourth International Conference on Permafrost, held July 18-22 at the University of Alaska-Fairbanks.

State Geologist Ross G. Schaff, said, "DGGS is pleased to support the Fourth International Conference on Permafrost by sponsoring publication of these field guides. The wealth of information they provide should enrich the experience of all who have travelled so far to visit the areas

described."

Beginning the collection is 'Guidebook to permafrost and Quaternary geology along the Richardson and Glenn Highways between Fairbanks and Anchorage, Alaska.' Edited by T.L. Péwé of Arizona State University and R.D. Reger of DGGS, the 263-page guidebook contains a physiographic map that explains relationships of features and landforms to glaciation; it also shows field-trip localities from Fairbanks south to the upper Cook Inlet area. Guidebook 1 costs $7.50.

The second report in the series, 'Guidebook to permafrost and related features of the Colville River Delta, Alaska,' by H.J. Walker of Louisiana State University, stresses the influence of permafrost on the forms and processes of the Colville River Delta, located in the continuous-permafrost zone of arctic Alaska, about halfway between Barrow and Barter Island. Guidebook 2 has 34 pages, with 27 figures and 1 table, and costs $2.

'Guidebook to permafrost and related features of the northern Yukon Territory and Mackenzie Delta, Canada,' edited by H.M. French of the University of Ottawa and J.A. Heginbottom of the Geological Survey of Canada, is the third in the new series. The 194-page report covers the entire length of the Dempster Highway from Dawson, Y.T. to Inuvik, N.W.T., and describes permafrost conditions and pingos near Tuktoyaktuk, at Kugmallit Bay. Guidebook 3 is priced at $8.50.

The fourth volume, 'Guidebook to permafrost and related features along the Elliott and Dalton Highways, Fox to Prudhoe Bay, Alaska,' was edited by Jerry Brown of U.S. Army Cold Regions Research and Engineering Laboratory and R.A. Kreig of R.A. Kreig and Associates, Inc., Anchorage. This 230-page book provides concise outlines of the biologic, geologic, historic, and physiographic aspects of the regions between Fairbanks and the North Slope, and how these characteristics relate to each other and to permafrost conditions. Guidebook 4 sells for $7.50.

The guidebooks may be inspected and purchased at any of the DGGS mining-information offices. Written requests are to be mailed to the DGGS Fairbanks office (p. 1).

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Two Kuskokwim maps, nine RIs released

This quarter DGGS has released two geologic maps on the Kuskokwim area, a professional report on instrumentation analyses of the Anchorage area, and nine Reports of Investigation.

Professional reports 78 and 79 are a continuation of a series of maps on the central Kuskokwim Mountains, which includes the Ophir mining district. Their companion map is Geologic Report 72, 'Geology of the Iditarod D-2 and eastern D-3 Quadrangles,' by the same authors. More specifically they are:

PR-78, 'Geologic map of the Iditarod D-1 Quadrangle, Alaska,' by T.K. Bundtzen and G.M. Laird.

PR-79, 'Geologic map of the McGrath D-6 Quadrangle, Alaska,' by T.K. Bundtzen and G.M. Laird.

Each report consists of one four-color plate, scale 1:63,360, and sells for $2.

Professional Report 80, 'Inclinometer strain analyses of Anchorage landslides, 1965-80,' is an analysis of instrumentation placed in the ground near three of the largest landslides of the 1964 Good Friday Earthquake. The report, supported under a cooperative research project with the Office of Earthquake Studies of the U.S. G eological Survey, is written by DGGS geologist Randall Updike. The author said that potentially unstable soils remain, but "no significant strain has occurred in the three major

slide areas, Turnagain Heights, L Street, and Fourth Avenue." The 140-page report sells for $4.

Nine New RI's

Nine more reports have been released in the new Report of Investigation series. The RI, which may present either preliminary data or final products of investigation, replaces the old Alaska open-file (AOF) series.

One RI issued is a minerals report on the Kantishna Hills - Dunkle Mine areas in Denali National Park. RI 83-12, 'Mineral-resource modeling, Kantishna-Dunkle mine-study areas, Alaska,' contributes to an ongoing, multidisciplinary study provided for by the Alaska National Interest Lands Conservation Act of 1980.

The 51-page report, by T.K. Bundtzen, sells for $2.

The remaining RI's published cover areas from the Aleutians to the interior. They are:

RI 83-6, 'Bedrock geologic outcrop map of the Livengood B-3 Quadrangle, Alaska,' by T.K. Bundtzen. 1 pl. (scale 1:40,000). $1.

RI 83-7, 'Preliminary bedrock geology of McGrath A-3 Quadrangle, Alaska,' by W.G. Gilbert and D.N. Solie. 1 pl. (scale 1:63,360). $1.

RI 83-10, 'Preliminary geologic map of parts of the Anchorage C-2, C-3, D-2, and D-3 Quadrangles, Alaska,' by L.E. Burns, T.A. Little, R.J. Newberry, J.E. Decker, and G.H. Pessel. 3 pl. (scale 1:25,000). $3.

RI 83-13, 'Preliminary geology of the northeastern Iditarod C-3 Quadrangle, Alaska,' by T.K. Bundtzen and G.M. Laird. 1 pl. (scale 1:63,360), 6 p. $2.

RI 83-14, 'Photointerpretive map of surficial geology of the Skagway A-1 Quadrangle, Alaska,' by G.D. March. 1 pl. (scale 1:63,360). $1.

RI 83-15, 'Progress report - thermal fluid investigations of the Makushin geothermal area,' by R.J. Motyka, M.A. Moorman, and Robert Poreda. 52 p. $1.

RI 83-16, 'The Middle Fork plutonic complex, McGrath A-3 Quadrangle, southwest Alaska, by D.N. Solie. 17 p. $1.

RI 83-17, 'Geologic hazards, southeastern Alaska: An overview,' by R.A. Combellick and W.E. Long. 17 p. $1.

Also available is an update of Information Circular 7, 'Alaskan companies and prospectors - 1982'. This revision includes the information contained in the former Information Circular 17, 'Companies interested in Alaskan mining possibilities.' The 52-page IC-7 is free.

'Arctic Anthropology'

Three members of the DGGS Archaeology section---Bob Shaw, Chuck Holmes, and Doug Reger---recently had papers published in 'Arctic Anthropology,' an internationally prominent periodical. Shaw and Holmes organized the 1980 Symposium on the Norton Interaction Sphere, held at the Eighth Annual Meeting of the Arctic Anthropological Association in Anchorage. They also edited the proceedings of the meeting in 'Arctic Anthropology.'

The volume is significant because it constitutes a synthesis of prehistory during the Norton Culture. Norton was the dominant culture throughout western Alaska for more than 2 millenia, from about 1500 B.C. to A.D. 1000, and is the base from which the modern Eskimo populations of western Alaska developed. State Geologist Ross Schaff said, "Such volumes as this constitute a summary of the data base against which the importance of specific archaeological sites can be eval-

uated and, therefore, are ultimately important to the state's land management."

'Arctic Anthropology' may be examined in either the Anchorage or Fairbanks mining-information offices. Copies of the 149-page volume (no. 19-2) may be obtained from Journal Division, University of Wisconsin Press, 114 North Murray St., Madison, WI 53715.

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Assayer Don Stein bids 'adieu' after 27 years with state

On May 27, the DGGS staff gathered to say farewell to state assayer Donald R. Stein, 55, who retired after 27 years with the state.

At a going-away luncheon, State Geologist Ross Schaff read telegrams honoring Stein's years of service from Governor Bill Sheffield and DNR Commissioner Esther Wunnicke.

Ironically, the luncheon was held at the site of Stein's first shower in Alaska, 30 years previously.

Stein first came to Alaska in 1953. A chemical-engineering student at the University of Buffalo, Stein decided to get out in the field for a firsthand observation of some of the materials he'd be working with. So he traveled across the 'lower-48' and then came to Alaska.

A 'long' summer

That summer the operator of the pump house that used to power water from the Chena River over Chena Ridge to hydraulic workings in Ester, 5 miles away, let Don pitch a tent on the grounds and use the facilities. The old pump house is now a popular restaurant in Fairbanks.

Stein planned to stay just one summer in Alaska, but Earl Beistline, then Dean of the School of Mines at the University of Alaska in Fairbanks, encouraged him to finish his degree at UA.

Stein did exactly that. He finished up in 1 year and then studied for 2 more years, getting background courses in mining.

'Friend of the Miner'

In May 1956, Stein 'found a home.' He was employed by DGGS's predecessor agency, the Territorial Department of Mines, as an assayer. Stein analyzed samples that miners from around the state had brought in for free assays, and continued learning more about the ores of the 49th State. For the next 27 years, Stein maintained a close bond with miners visiting the state assay lab.

Once, Stein unwittingly defused a ticklish confrontation. About 15 years ago, DGGS mining geologist Tom Smith, while mapping a remote site in the interior, looked up and saw a rifle barrel pointing at him from a nearby cabin window. Smith, no stranger to unorthodox encounters during his years of tramping about the state, quickly raised his arms and shouted, "Don't shoot. Don't shoot. I work for Don Stein." With that, the rifle was lowered and Smith was invited in for coffee.

Always eager to please the public, Stein would often forgo his scheduled assay work to spend an hour or so with visitors, offering advice and lending a sympathetic ear to tales of woe (or glory). However, he frequently had to 'pay his dues' by working well into the night to get caught up after chatting with the visiting public.

Many Alaskan miners will miss Stein's presence at the assay lab. Over the years, his expertise in the many aspects of mining and his willingness to share this knowledge have become highly valued.

Though he has retired, the silver-maned former assayer is not slowing down. He is working for Engelhard Industries West and is also chairman of the Fairbanks branch of

the Alaska Miners Association.

Stein has long been active in local Fairbanks community affairs. He is active in his church, was one of the founding fathers of the popular 'Little Dribblers' youth basketball program and, with his wife, Evelyn, raised five children, all of whom have been active in local music and sports programs.

Good luck, Don. Alaska's mining community and DGGS staff will miss your ready smile.

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Chinese join world permafrost conference here

(from Fairbanks Daily News-Miner, July 5, 1983)

Alaskans have something in common with the Republic of China: permafrost.

Only three previous international conferences on permafrost have been held, but when the fourth gets under way July 18-22 at the University of Alaska-Fairbanks, it will for the first time include Chinese as active participants.

The People's Republic of China did send observers to the last permafrost conference 5 years ago in Edmonton, Canada. This year the Chinese are expected to present their own research data and findings.

Permafrost may exist on Mars and the moons of Jupiter. Permafrost does exist on Earth, covering about 23 percent of the ground area.

The first international permafrost conference was held at Purdue University in Indiana 20 years ago. Subsequent conferences were held in the Soviet Union and Canada. More than 800 participants are expected here, which would make this the largest conference to be conducted at the UAF campus.

Foremost authorities, scientists, and engineers from around the globe, possibly 25 countries in all, will gather here for the weeklong conference.

The conference is expected to have a strong draw because of the range of information to be presented. For instance, construction and environmental engineers will be looking for ways to build in permafrost areas and reduce problems and damage. Planetary permafrost, that is, findings that indicate Mars and Jupiter's moons have permafrost formations, will attract participants from the National Science Foundation and National Aeronautics and Space Administration.

There is a special feature for Alaskans and visitors. A permanent exhibit at the University of Alaska Museum is expected to be unveiled in conjunction with the conference.

Permafrost is ground material that continually has a temperature less than 32°F for 2 or more years.

The heart of the conference rests in technical sessions, featuring the presentations of some 350 formal papers on findings and panel discussions.

Among topics are pipeline construction, permafrost terrain, environmental protection, frost heave and ice segregation, subsea permafrost, climatic change, and geothermal regions.

Dr. Gunter Weller of the University of Alaska-Fairbanks Geophysical Institute is vice chairman for this conference.

"These (conferences) only occur every 4 or 5 years, they're very infrequent," said Weller. International conferences are expensive and difficult to organize. "You couldn't possibly do it every year. It's also interesting to allow knowledge to accumulate."

More than 600 people have registered so far, and Weller expects the attendance to come near 800.

Among countries participating are Scandinavia, the Soviet Union, Western European nations, Poland, Czechoslavakia, Japan, Argentina, Chile, and New Zealand.

Conference chairman is Dr. Troy L. Pèwé, formerly with UAF and now at Arizona State University. Pèwé is an authority on permafrost, and his work

here documented areas where it exists. He is a world authority on arctic geomorphology, a science of changes in earth surfaces and interpretation of those changes.

Several field trips are being offered, including tours on geological and vegetation aspects related to construction, two tours relating to engineering, a tour of a permafrost tunnel, and one to a frost-heave facility.

Also offered is a walking tour of campus, rail trip to Denali National Park, a chartered bus trip to Prudhoe Bay, a highway and air trip to Northern Yukon Territory in Canada and the MacKenzie Delta, a chartered bus trip to Anchorage via the Copper River basin, and a trip to the Colville River Delta.

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Coal export won't begin for year, but he's ready
(from Fairbanks Daily News-Miner, July 13, 1983)

Although shipments are more than a year away, the Usibelli coal mine is all but ready to fulfill a 15-year contract to export 800,000 metric tons of coal to Korea annually, a move that will double the production of Alaska's only operating coal mine.

Company officials just last week moved into an $8 million state-of-the-art building that features a computerized spare parts retrieval system, chemical laboratory, and enough garage space to service a fleet of new dump trucks.

Six 75-ton trucks, which each can carry as much as a railroad hopper car, arrived earlier this month and are being outfitted to haul coal the short distance from the black seams overlooking the tiny town of Healy to the Alaska Railroad loading station.

Yet to occur before the shipments to Korea is the hiring and training of an additional 30 workers. But don't bother making the 110-mile drive to sign on.

President Joe Usibelli already has 500 applications on file and receives several more each week for jobs that pay nearly $30 a hour, including a lucrative package of benefits.

"It's expanded faster than I would have anticipated," the folksy Usibelli said Tuesday during a tour of the coal mine that barely resembles the hand-to-mouth operation owned by Fairbanks industrialist Austin "Cap" Lathrop more than 40 years ago.

In January, Suneel Alaska Corp., an American subsidiary of a Korean transportation firm, signed a contract to sell Usibelli coal to the state-owned Korea Electric Power Corp. of South Korea. Since then Suneel has been installing a shipping facility in Seward, where it plans to transport Healy coal on the Alaska Railroad.

The contract calls for 800,000 metric tons a year, which Usibelli said translates into eight or nine shipments annually from Seward or three 6,000-ton trainloads a week from his family-owned mine. The company currently produces about 830,000 short tons of coal each year, virtually all of which is sold in Fairbanks for electricity generation.

Once the coal is removed, law requires the company to restore the ground to near its original contour.

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Our Gangue....
By Frank Larson, editor

Ever had one of 'those' days? You know, the kind of day typified by the old postcards that used to say, "I knew I should have stood in bed"? Well, the worst of your bad days will probably never top the one suffered recently by an Interior miner we'll call Joe...About a month ago, DGGS geologist Tom Bundtzen bumped into Joe out in the field. Joe asked him, in a tremulous, hesitant voice, "Tom, you haven't by any chance seen my house, have you?"....Poor Joe, you see, had returned home after spending a couple days in town, buying beans, beer, and dynamite (a possible redundancy here),

only to find something was missing---home. Joe's cupboard was not bare. It was gone. All Joe found 'at home' were Cat tracks---but not like the ones you find in a litter box. Someone with a large rig had taken a liking to Joe's two-story frame house, located in the Kantishna mining district, 125 miles SW of Fairbanks, and hauled it off. Just like that. Hooked a line around it and toted 'er off as if it were an old cancer-ridden '53 Wombat Six....Joe didn't even get to hold a yard sale....Will Homeless Joe, the Gypsy of the Kantishna Hills, ever find 'home'? Will he learn the identity of The Phantom from Allied Van Lines (Tundra Division)? Stay tuned to the next episode of the continuing drama, "Home Away from Home." ....In the meantime, a word of caution: If you see a large 'cat' (like a D-9) cruising your neighborhood, postpone that trip to town. Or, if a new two-story white frame house 'popped up' in your neighborhood last night, drop us a line. We'll pass the word to Joe....In the news, DGGS is going to update Information Circular 8, 'Consultants available for work in Alaska.' Send us your firm name, address, and type of expertise offered. We'll add it to the revised issue...The Alaska Senate's Resources Committee reported that state placer miners spent $80-83 million in labor (2,350 jobs), goods, and services last year....Aspen Exploration of Denver is asking the Corps of Engineers for the green light to sample gravel and mineral deposits along the shores of Cook Inlet from Kalgin Island to Knik Arm. Samples will be drilled by boat or barge near shore or will be dug from shallow pits between tide lines. Company sources say they're looking for commercial deposits of gold, other heavy minerals, and gravel (a scarce commodity in Anchorage)....The Dept. of Interior awarded a $1.2-million contract to Salisbury and Dietz of Spokane to assess the mineral deposits of Denali National Park. They will analyse samples from 39 patented claims in the Dunkle Mine and Kantishna Hills areas, which were included in the new park boundaries by federal Alaska-lands legislation in 1980. Congress will use the info to decide if mining will be allowed to continue there....In the Gulf of Alaska, Arco has spudded its most expensive well ever. Expected to cost $40 million, the well is being drilled by a submersible drilling rig 40 miles south of Yakutat. Arco acquired the lease in a federal OCS sale in 1980....Oxford Assaying and Refining is about to open a 3,000 ft^2 gold smelting and assaying facility in Fox, 10 mi north of Fairbanks....Alaskan miners who lost about $2 million in the May 1983 collapse of Delta Smelting and Refining can get loans from the state to help get started again. Qualified miners (5 yr experience) can get loans for operating expenses for the 1983 season for "up to $25,000 on an expedited basis, or for more under standard procedures," said Bob Arnoldt, Director of the state Division of Investments in Juneau....In the June newspapers in Anchorage were ads for a new organization: The Society of Unemployed Economic Geologists....In an agreement with Doyon, Arco-Alaska obtained a 7-yr exclusive right to explore for oil and gas in the Native Corporation's 386,000 acres of land in the Kandik-Nation Rivers area, near the Yukon boundary. Included in the area is Step Mountain, which Arco suspects may have "substantial quantities" of oil and gas, according to Arco VP Tom Wilkinson. Arco will reconnoiter and map out of Eagle within the next year....But, the best news of all is that the Baylor (Texas) College of Medicine has reported that "drinking three beers a day may offer the same protection against heart disease as jogging." What this means, folks, is simply this: Somewhere out there, three of you owe your lives to me.....Cheers.

Metals Market

	July 11, 1983	3 Months Ago (4/18/83)	1 Year Ago (8/2/82)
Antimony metal per lb (NY dealer)	$ 0.80	$ 0.95	$ 1.05
Beryllium ore, stu*	$110-135	$110-135	$110-135
Chrome ore per long ton (Transvaal)	$ 48-52	$ 48-52	$ 48-52
Copper per lb (MW-prod)	$ 0.82	$ 0.81	$ 0.73
Gold per oz	$ 415.16	$ 432.15	$ 347.18
Lead per lb	$ 0.20	$ 0.21	$ 0.28
Mercury per 76-lb flask	$ 278.00	$ 340.00	$ 345.00
Molybdenum conc. per lb (Climax)	$ **	$ **	$ 7.90
Nickel per lb (cathode)	$ 3.20	$ 2.27	$ 2.42
Platinum per oz	$ 428.15	$ 419.72	$ 287.84
Silver per oz (H&H)	$ 11.55	$ 11.44	$ 6.89
Tin per lb (MW composite)	$ 6.99	$ 6.94	$ 6.04
Titanium ore per ton (ilmenite)	$ 70-75	$ 70-75	$ 70-75
Tungsten per unit (GSA domestic)	$ 99.60	$ 99.60	$ 99.60
Zinc per lb (MW-US PW)	$ 0.40	$ 0.38	$ 0.38

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

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