

STATE OF ALASKA

Department of Natural Resources

Division of Geological & Geophysical Surveys

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DGGS computing services described

By Norman W. Crosby,
DGGS operations research analyst

Throughout history, maps have been indispensable guides to those who needed to know the lay of the land. For today's earth scientist and resource manager, maps are no less valuable than they were to the navigator of earlier times.

Mapping methods have been revolutionized by the computer and its related automated modeling systems. Today's computerized systems produce a wide range of analytical aids.

DGGS uses three distinctive but interrelated computing systems: the geoprocessor, the scientific processor, and geochemical data modeling. Each has unique capabilities in making scientific maps and tables.

Geoprocessor

Most widely used by DGGS today is the geoprocessor, which was developed

for the Alaska Department of Natural Resources and installed on a Data General minicomputer in 1980 (fig. 1). The system, commonly used in resource planning, recently provided information for siting a proposed transportation corridor in south-central Alaska; it sifted through data on soils, slope, and vegetation to produce a 'route of least cost' between three points.

The geoprocessor provides centralized computing support for the DGGS staff who, with remote terminals, can access analytical modeling of raw data.

Capable of handling both polygons and gridded data (and converting from one to the other), the geoprocessor is extremely versatile. In essence, it manipulates data and plots maps (figs. 2, 3). More specifically, the geoprocessor can:

•Measure data - Calculate an area of soil types on a map or the length of streams in a watershed, for instance, and summarize all



Figure 1. DGGS staffer at console of Data General MV-8000 geoprocessor.

available data within a study region.

- .Interpret data - Produce---from raw data on soils---maps that reveal engineering limitations, land use, or fire potential.
- .Combine data - Create a map that shows agricultural suitability from disparate data (slope, soils).
- .Extract data - Make a map that depicts specific data such as soils with a certain organic content or porosity or anadromous streams of a specified length.
- .Generate new data from elevation data - Draw a slope-aspect map from digitized elevation data, calculate the viewable area from a given point, and produce a contour map at any desired interval.
- .Plot data - Plot (on mylar or paper) labeled and shaded maps at any scale and make maps with special symbology.

Scientific Processor

In 1982, the Alaska Legislature mandated DGGS to acquire and interpret

baseline geophysical data for future state oil-and-gas lease sales. The acquired data are analyzed in the DGGS Anchorage office.

In the past 3 years, DGGS has developed a 'scientific processor'---which resides on the Data General minicomputer---to provide mathematical models of the geophysical data. The scientific processor interprets geophysical data and makes models of stratigraphic hydrocarbon traps. With this information, DNR selects a bidding method that maximizes Alaska's revenue from oil-and-gas leases.

In brief, the scientific processor can:

- .Interpret data - Produce high-quality subsurface maps or models of geological structures from seismic, gravity, and magnetic measurements obtained from oil companies and DGGS field studies.
- .Make base maps - Produce 'shot-point' location base maps with data from navigation tapes, seismic interpolations, and auxiliary location information.
- .Plot data - Plot (mylar or paper) depth-posted shotpoint base maps and geophysical maps, labeled and shaded at any scale.
- .Measure data - Digitize and interpolate baseline data to produce a series of velocity composites or base maps.

Because of the sensitive nature of the analyzed oil-and-gas lease-sale

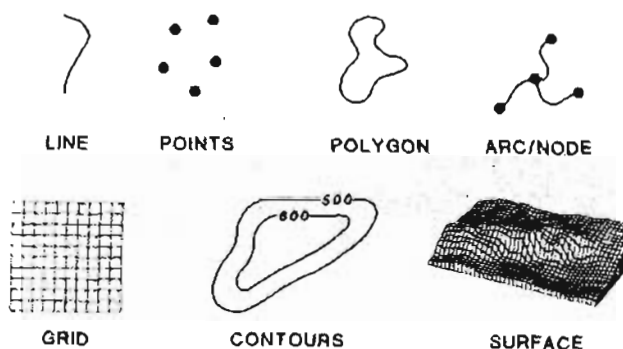


Figure 2. Samples of data generated by Data General geoprocessor.

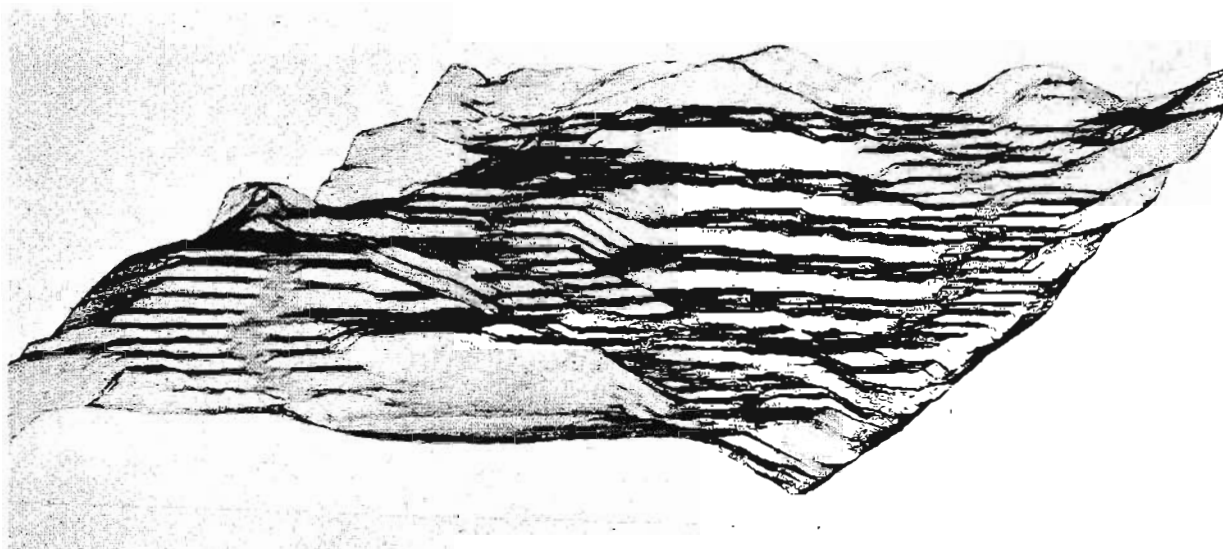


Figure 3. Typical three-dimensional stratigraphic plot derived from geoprocessor and map plotter.

information, DGGs had its eighth-floor quarters in the Frontier Building designed to accommodate a secure area, with personnel access controlled by password, data encryption, and cipher code.

Geochemical Data Modeling

In Fairbanks, the DGGs Geochemical Services unit has a computer system (again, the versatile Data General) that indexes statewide geochemical sampling results.

A primary database for the Geochemical Data Modeling system is information on more than 60,000 geochemical-sampling sites in Alaska, originally generated by the U.S. Department of Energy's National Uranium Resource Evaluation program; DGGs obtained the results of about 2.5 million NURE chemical analyses from Los Alamos in 1982.

The modeling system, which is executed through a 'user-friendly' set of computer-assisted menus, routinely accepts point data, raster (kinescopically produced) data from other database systems (including Landsat), and map-based data (points, lines, or polygons). The system also accepts positions and values for geochemical

point samples from field maps and can insert geologic information and cultural features such as roads and structures.

Now it gets technical. Briefly, the geochemical point data are 'surfaced' to produce a raster database, and image-processing algorithms are applied to the raster file. Differencing, clustering, and ratioing produce a resultant raster data file. These data may then be plotted to scale for a map, stored in memory, or treated to additional 'massaging.' (The geographic database system with its vertical, multilayer analysis routines and horizontal proximity functions may also be used with the same gridded structure.) Point data and subsets of these files may be used as input to the two DGGs systems previously described, to automated drafting systems, or to non-DGGs systems.

Summary

DGGs can now provide extensive scientific computer processing for its personnel and for other state and federal agencies. In 3 years, DGGs has consolidated its scientific computing tools into a centrally controlled unit that is distributive in practice. Its small but powerful network allows the

DGGS staff to perform research at diverse locations.

Further challenges? Short term, the DGGS Computing Services Section is expanding its communications network one step further. We are designing and installing a tie-in of our word-transfer system. This will 'marry' earth-science data on charts and maps with narrative produced on word processors. Long term, we are studying ways to communicate via computer to other federal, state, and private automated data-collecting systems.



Placer miners win reprieve

(from Fairbanks Daily News-Miner, Mar. 31, 1985)

Placer miners on 30 Alaska rivers and streams won't be shut down this summer if they form operating agreements with the state, according to plans announced here Saturday by Gov. Bill Sheffield and his new Commissioner of Environmental Conservation, Bill Ross.

Miners at the seventh annual Conference on Alaskan Placer Mining had expressed fears that the state would close down the industry this summer. Sheffield's plan will apparently allow most placer miners to operate at least during the upcoming season.

But in presenting the plan at a conference luncheon at Alaskaland, Sheffield reiterated his stand on water quality in the state.

"When there's industrial activity on Alaska's rivers and streams, the water should be available to support that activity," Sheffield said. "But--and this is a big qualifier--those industries must not adversely affect downstream users, whether they're people or fish or moose."

Ross said that miners on the 30 'priority' streams this summer will not be cited for violating the state's turbidity standards as long as they are complying with operating conditions specified by agreements with the state.

"What we want you to do is to work with (state and federal agencies) to come up with practices that will crack the turbidity barrier by the time this season starts," Ross said.

The priority list will be used by the state Department of Environmental Conservation and other agencies to direct limited funding and personnel to areas where increased enforcement and technical assistance are needed this season, Ross said. The list was developed by environmental, mining, and village organizations.

Miners on nonpriority streams will be dealt with as complaints are received, but will not be prosecuted under turbidity standards if they are making good-faith efforts toward cleaning up the discharged water, Ross said.

Sheffield also announced that the state will enforce new, tougher standards for actual sediment content in water coming from placer mines--referred to as 'settlable solids.'

The new, stricter settlable-solids standards will be enforced on both priority and nonpriority rivers and streams, Ross said.

The turbidity standard, which measures the amount of light blocked by sediment in the water rather than the amount of sediment itself, is a different and much more difficult standard for miners to meet.

Sheffield had no specific solutions for miners who do not meet the turbidity standard, but expressed hope that new equipment and a grant program for innovative cleaning techniques would bring progress on the problem.

"By tightening permit limits, designating priority streams, enforcing settlable-solids criteria, and providing more technical assistance, I'm confident that water quality on Alaska's placer-mining streams will improve this summer and that the industry will be able to operate," Ross said.

Ross also assured miners that as long as they have a permit from the

Environmental Protection Agency to operate this summer, they will be 'absolutely immune' from third-party suits brought by environmental groups. The EPA permit acknowledges a miner's noncompliance with water-quality standards but gives a 1-yr grace period to allow the miner to clean up his operation.



Only 1,095 new claims filed; lowest in 8 years

The number of new mining claims filed slumped to its lowest total since 1975, said Fairbanks-based DNR Natural Resource Officer Mildred Brown.

Only 1,095 new claims were filed during the past 3 months, she said. That total is less than half of the preceding quarter, when 2,431 were filed. Last year at this time, 2,416 new claims were received at the office, Brown said.

The Nenana and Anchorage recording districts shared the bulk of the filing activity. The claims by recording district are listed below.

	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>
Fairbanks	111	74	24
Manley Hot Springs	4	3	--
Nulato	47	--	--
Mt. McKinley	48	--	--
Nenana	--	116	--
Kotzebue	--	4	--
Talkeetna	10	85	--
Palmer	10	15	7
Nome	4	8	9
Seward	38	18	47
Juneau	77	--	86
Haines	2	1	9
Ketchikan	--	5	6
Anchorage	124	--	70
Iliamna	--	--	1
Cordova	1	--	--
Chitina	20	4	2
Valdez	--	--	4
Kodiak	--	--	1
Total:	496	333	266

DGGS personnel moves abound

During the quarter, two people transferred to DGGS from other departments, one transferred internally, three were hired, and two departed.

In Eagle River, former DGGS student intern Danita Maynard was hired as a hydrologist. In the Anchorage office, Jean Tam started her new duties as a Natural Resource Officer and Geologist Douglas Jones began his career in the Resource Analysis section, which he heads. Also new in Anchorage are transfers Rolfe Buzzell, a historian from the Department of Labor, and analyst-programmer Dan Anctil from the Department of Fish and Game. Geologist Roman Motyka transferred from Fairbanks to the Juneau office.

Two DGGSers left in March; Fairbanks clerk-typist Tricia Hardt and Eagle River hydrologist George McCoy, who resigned to pursue a career in real estate.

Ryan Bennett Combellick may someday claim eight as his lucky number. The 8-lb, 8-oz lad was born on the 8th of March to his parents, geologist Rod Combellick and his wife, Michelle. Ryan has a 3-yr-old sister, Jennifer.

In other personnel news, Fairbanks-based hydrologist Steve Mack was named treasurer of the Alaska section of the American Water Association, State Geologist Ross Schaff celebrates his tenth anniversary as DGGS Director May 17, and Fairbanks staffers Carole Stevenson and Jeff Kline returned to work after minor surgery.

On a tragic note, word came in early April that former DGGS geological assistant Jeff Morehouse was killed in a climbing accident in Arizona. Morehouse worked five summers with DGGS in the late 1970s and early 1980s.



Margarete Mühl-Jäckel, Judge of the Administrative Court of Berlin: "Women who seek to be equal to men lack ambition."

DGGS well logs climb 'out of the hole'

By DGGS hydrologists Larry Dearborn and
James Munter

For over three decades, Alaskan well drillers have submitted subsurface and well-construction information (logs) to local, state, and federal agencies.

To date, detailed data from about 11,000 logs have been stored in the U.S. Geological Survey's Ground Water Site Inventory (GWSI) computer database. Use of this handy, permanent repository for processed well-log data often eliminates looking up original drilling reports.

In 1977, the legislature mandated DGGS to "...acquire, process, and file data from well-drilling logs." Soon after, DGGS created a new well-log form for drillers. (They are free; about 1,500 are given to drillers each year.) DGGS is still striving to become the focal point for receiving well logs from both drillers and governmental agencies and will process, store, and retrieve well-log information.

DGGS routinely channels 150 to 200 well logs per month to the USGS for processing into the GWSI system. Unfortunately, the GWSI unit is understaffed, and about 3,000 to 4,000 logs (fig. 1) await entry; this backlog represents 2 to 3 yr of work at current rates.

Three years ago, DGGS recognized the need for a faster, more current system of accessing fundamental well information and, using DNR's geopro-

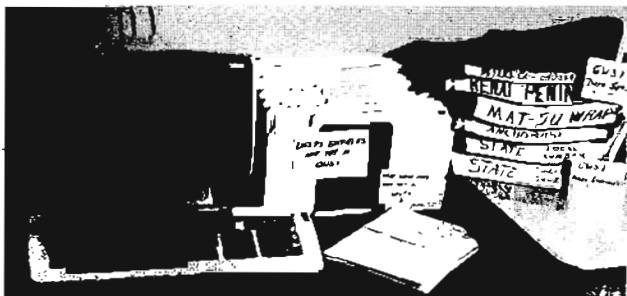


Figure 1. Well-log data in WELTS program (left) and backlog of data for entry into GWSI (sample print-outs at right).

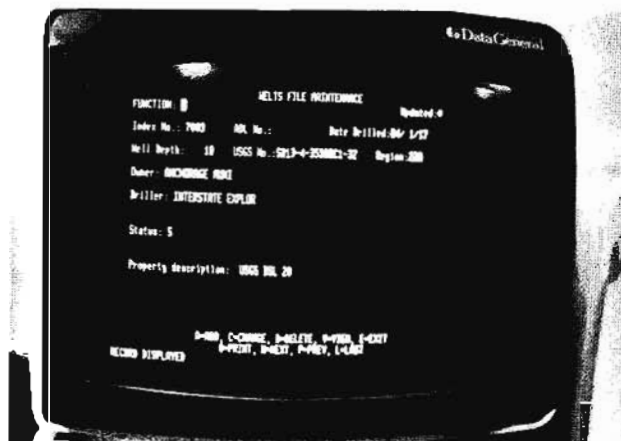


Figure 2. Typical WELTS file showing key well identifiers.

cessor computer (p. 1), set up a well-log tracking system called WELTS. Well-log data (fig. 2), including state water-rights file number, owner name, well depth, and location (unverified), are entered into the computer, along with a WELTS index number that is unique to each log sheet. WELTS data may be printed out by region, by owner name, or by subdivision, block, or lot. A specific WELTS index number enables DGGS to easily find a particular log among thousands waiting to be entered into GWSI.

Unfortunately, WELTS did not come into being overnight. Hardware and interface problems cropped up often. But finally, with the acquisition of a 'dedicated' telephone line to the Eagle River office and with the recent hiring of hydrologist Danita Maynard (p. 5), WELTS has come to life. She entered about 2,000 well logs in the last 2 months, which brings the total WELTS database to 7,000 records.

Today, almost all the GWSI backlog is in WELTS and available for use.



"An esker is formed under conditions. These conditions are very exceptional and no-one has ever seen them. Even lecturers don't know how eskers were formed, but there are many guesses. I have never seen an esker and I think it is unscientific to guess."--Geological Howlers.

Prospecting for diamonds in Alaska

By Robert B. Forbes

In 1982, Jim Regan found a small (1/3-carat) diamond on Crooked Creek near Central, Alaska. In 1984, Mr. and Mrs. Frank Warren found a larger (1.4-carat) diamond while placer mining on the same creek.

Except for two diamond inclusions in native platinum from Goodnews Bay (described in 1976 by J.B. Mertie, Jr., in U.S. Geological Survey Professional Paper 938), the Crooked Creek diamonds appear to be the first documented finds in Alaska.

The source and concentration of diamonds in Crooked Creek are not known, and the economic significance of the discoveries cannot be gauged until test yardages of placer gravels are processed for indicator minerals and diamond content with methods specifically designed for diamond---rather than gold---recovery.

Diamond Source

An occurrence of placer diamonds does not necessarily mean that the primary source rocks are present in the highlands adjacent to the current drainage system. As with placer gold, placer diamonds may have encountered more than one cycle of erosion, transport, and deposition en route to their present location. In some cases, the primary sources of diamonds in minable placer deposits have never been found; in others, persistent prospecting has led to parent diatremes (explosively emplaced pipes).

Lamproites

Recent Australian discoveries have identified a new class of diamond-bearing rocks known as lamproites. Lamproites are relatively enriched in potassium and titanium and are more siliceous than kimberlites. Recognition of lamproites as a new group of diamond-bearing rocks enhances

the diamond-prospecting potential of Alaska.

Kimberlites

Diamond-bearing kimberlites usually contain exotic rock and mineral fragments derived from the deep crust and upper mantle of the Earth. Some of these minerals, including magnesium-rich garnet (pyrope), chrome diopside, and magnesium-chromium-rich ilmenite, are used by kimberlite prospectors as indicator minerals in stream sediments and residual surficial deposits. Unfortunately, the indicator minerals for lamproitic rocks, including chromite, andradite garnet, zircon, and rare titanium-bearing minerals, are not as distinctive.

Diamond-bearing kimberlites and lamproites most commonly occur as diatremes. In cross section, kimberlite pipes tend to be cone shaped, whereas lamproite bodies resemble a champagne glass. Typical kimberlite pipes may exceed 2 km in depth; the maximum depth of a lamproite pipe is thought to be about 300 m. The surface area of both types of pipes is usually less than 1 km².

Geophysical methods such as magnetometer resistivity and conductivity surveys are effective prospecting tools for locating and defining kimberlite and lamproite bodies.

(Bob Forbes, UA professor emeritus, is participating in a DGGS study on diamonds in Alaska. --Ed. note.)



Firm wants to develop new gold mine at old site
(from *Juneau Empire*, Mar. 6, 1985)

Besides the Noranda mineral find at Greens Creek, another 'new' mine might be opening in Southeast next year.

Exploration Ventures Company of Spokane has announced plans to develop

a small gold mine on Chichagof Island, 50 mi north of Sitka. The new operation is a new vein discovered at the site of the Chichagof Mine, which was one of the richest gold mines in Alaska prior to its closing during World War II.

John Hite, president of Exploration Ventures, said his company started exploration work at the mine in 1982. Two years ago the company formed a joint venture with Queenstake Resources of Vancouver, B.C., and picked 14 gold-exploration targets on patented claims lying inside the Chichagof-West Yakobi National Monument, west-southwest of Juneau.

In 1983, drilling found a new 4-ft quartz vein containing 0.4 oz gold per ton. Last summer the company drove a 450-ft tunnel and rehabilitated 700 ft of old tunnels to reach a mineralization zone called the Big Croppings.

At the start of the zone, 500 ft below ground, a gold vein 8 in. wide containing 0.09 oz of gold per ton was found. Hite said another 88 ft of tunnel was driven, with the vein expanding to 5 ft in width; its grade averages 1.11 oz/ton---an unusually good gold find.

Hite said the geometry of the find indicates the company has found a major new gold-ore shoot similar to those at the old mine. He says the company has proven reserves of 100,000 tons of ore averaging 1.2 oz of gold.

He said the company also hopes that drilling on the other ore zones will find three or four more similar veins, bringing the new mine's ore reserves to about \$120 million.

"At current ore prices, this mine is extremely profitable. If gold would climb again in price, it would be a bonanza," said Hite.

The joint venture, which has spent \$1.5 million on exploration so far, intends to spend more money this summer to continue development of the Big Croppings vein from two adits, to drill core samples from other rock

formations, and to explore an ore shoot being developed when the mine closed.

Hite said his company wants to start the permitting process to win permission for tidelands access to the mine. The access is guaranteed by the Alaska National Interest Lands Conservation Act.

He said he hopes the mine could go into production as soon as 1986.

"This is a small mine. At most, it should produce no more than 100 to 150 tons of ore a day. At this size we just don't think there should be any environmental problems slowing permitting," Hite said.

One big catch before the mine opens is that the company needs financing for the costs of the underground development. Hite said he is negotiating with several firms and hopes the mine will have firm expanded financial backing within 2 mo.

Hite said operating costs should only come to roughly half the current price of gold, giving the mine a substantial profit margin.

Mining rights, 50 percent of which were purchased from the heirs of the original Chichagof Mining Company, according to the state's Office of Mineral Development, could allow mining to restart at the site of one of Alaska's great mines. The mine, started in the early 1900s, produced 647,708 oz of gold at an average grade of 1.2 oz/ton of rock before its 1942 closure.



Meshik Arc report, 1984 minerals survey,
6 RI's published

During the quarter, DGGS published one Professional Report, the annual minerals review (Special Report 38), and six Reports of Investigations.

Meshik Arc

Professional Report 88, 'The Meshik arc - an Eocene to earliest

Miocene magmatic arc on the Alaska Peninsula,' is a short (14 p.) description of the Meshik arc, which is oriented along the trend of the Alaska Peninsula, subparallel to the present-day Aleutian arc. Tectonic interpretation by the author, F.H. Wilson (U.S. Geological Survey), suggests that the arc represents a relatively stationary period in the otherwise mobile migration of the Alaska Peninsula terrane, that subduction was an important process along the Alaska Peninsula during Tertiary time, and that most migration of the Alaska Peninsula terrane since Cretaceous time took place in Paleocene and middle Miocene time. Professional Report 88 costs \$2.

1984 Minerals Survey

Special Report 38, 'Alaska's mineral industry - 1984,' will be shipped from the printer in late May, said DGGs Publications chief Cheri Daniels.

The 57-page report, which summarizes exploration, development, production, and drilling (excluding oil and gas) activities in the 49th State, was written by G.R. Eakins, T.K. Bundtzen, L.L. Lueck, M.S. Robinson (all of DGGs), C.B. Green (Office of Mineral Development), and J.L. Gallagher (Division of Mining). It is the fourth annual minerals synopsis published jointly by the Department of Natural Resources and the Department of Commerce and Economic Development.

Special Report 38 is free and will be available at all DNR information offices (p. 1) and at OMD, 675 - 7th Ave., Fairbanks 99701.

Reports of Investigations

DGGs published six RI's during the past 3-month period. RI's 85-2, -3, and -4 are compilations of geologic data from the Taylor Mountains Quadrangle in southwestern Alaska; they were produced in cooperation with the U.S. Geological Survey. The new Reports of Investigations are:

.RI 85-2, 'Compilation of geologic data from the Taylor Mountains D-4 Quadrangle, southwestern Alaska,' compiled by R.R. Reifensstuhl, John Decker, and W.L. Coonrad (scale 1:63,360, 1 sheet). \$2.

.RI 85-3, 'Compilation of geologic data from the Taylor Mountains D-7 Quadrangle, southwestern Alaska,' compiled by John Decker, R.R. Reifensstuhl, and W.L. Coonrad (scale 1:63,360, 1 sheet). \$2.

.RI 85-4, 'Compilation of geologic data from the Taylor Mountains D-8 Quadrangle, southwestern Alaska,' compiled by R.R. Reifensstuhl, John Decker, and W.L. Coonrad (scale 1:63,360, 1 sheet). \$2.

.RI 85-5, 'Hydrologic reconnaissance of the Wulik River basin, Alaska, 1982-83,' by E.J. Collazzi, R.R.W. Ireland, and G.A. McCoy (scale 1:250,000, 1 sheet). \$2.

.RI 85-6, 'Preliminary bedrock geologic map of the Skagway B-4 Quadrangle, Alaska,' by E.C. Redman, W.G. Gilbert, B.K. Jones, D.S. Rosenkrans, and B.D. Hickok (scale 1:63,360, 1 sheet). \$2.

.RI 85-7, 'Hydrologic reconnaissance of the South Fork Kuskokwim River basin, Alaska, 1981-82,' by R.R.W. Ireland and E.J. Collazzi (scale 1:250,000, 1 sheet). \$2.



Ester Dome gold mine to get second life (from Fairbanks Daily News-Miner, Feb. 21, 1985)

A hardrock gold mine on Ester Dome that will employ about 50 people is scheduled for startup next October, after 12 yr of development and testing. The mine is located on six mining claims belonging to Roger Burggraf.

The mine will initially process 115 tons of ore per day and employ 51 people, according to Gary Anselmo, president of Silverado Mines, one of the partners in the joint-venture

corporation that will develop the mine. At some later date, production will go to 230 tons per day and 73 people will be employed.

Burggraf bought the property in 1973 from Delia MacDonald, niece of O.M. Grant, the miner who staked the original claims. Burggraf said Grant was an old-time miner who hit every gold rush in Alaska and the Klondike, from Dawson to Iditarod. Grant died at the age of 95 in 1954, Burggraf said.

When he bought the mine, it was "just a hole in the ground," Burggraf said. He first looked at the mine during the winter and, because of the snow cover, came within feet of stepping into a 150-ft shaft.

People had thrown junk into the mine for years, so his first task was to drag out the roofing, logs, stoves, and barrels that had accumulated.

He then recribbed the entire shaft and tested the quality of the ore at the bottom.

"It didn't look so good," he said. But he sank the shaft 30 feet deeper anyway and dug horizontally to look for gold veins.

He eventually found some promising gold ore and, in 1978, took Anselmo underground to take a look at the property. Anselmo said Burggraf had done a "fantastic" job in preparing the mine.

Since then, the Grant Mine joint venture has been studying the economics of developing the mine.

On Tuesday, Aurex Inc., an Alaska corporation controlled by Marubeni America Corporation and Tri-Con Mining, Ltd., of Vancouver, notified Silverado Mines, Ltd., of their formal decision to proceed to production.

The Vancouver-based Silverado holds a 55-percent interest in the Grant gold mine, with Aurex holding 40 percent and Tri-Con Mining 5 percent.

The mine should begin operation in October, depending on the availability of equipment, Anselmo said.

To get the gold ore, miners will

drill into the vein system, blast the rock, and scoop out the resulting broken rock. The rock will be brought to the surface, crushed further, and processed in a mill.

Anselmo said the company will make every effort to make the mine aesthetically pleasing.

"That mine is going to get a lot of attention from officials because it's the first hardrock gold mine like this," Anselmo said. "We have decided to be a showpiece."

The Fairbanks public will also be scrutinizing the mine, Anselmo said. "We'll do our best to dress it up," he said.

The environmental permitting process has been handled by the same consulting firm that is working on the Red Dog mine in northwestern Alaska, he said. All applications have been submitted. "We've done our homework," he said.

Anselmo generally estimated the gross revenues from the project to be about \$9 million annually during the first phase of production. That figure should jump to \$18 million during the second phase.

The taxes on the project are still somewhat nebulous, Anselmo said. Based on an analysis completed for the joint-venture partners by Tri-Con Mining, the cost to produce 1 oz of gold will be \$175, with a gold recovery of 98 percent. Payback, including all preproduction and construction costs, will be achieved by 1989 given present gold prices, the company added.

The total reserve on one vein structure alone is enough for 16 yr at 230 tons a day, according to the Tri-Con Mining report, and other parts of the property could add a further 5 to 14 yr of mine life.

The report also expressed confidence that the estimated grade or even higher grades would be encountered during development of the ore zones.

Mining on State-selected land in Alaska--
A DNR review

What is State-selected land?

State-selected land is federal land that the State has applied for as part of its statehood entitlement. The term 'State-selected land' refers to land for which the State has not received tentative approval (T.A.) or patent from the federal government. This land does not belong to the State.

Can a mining claim be staked on State-selected land?

The filing of a land selection by the State of Alaska has the effect of closing that land to federal claim-staking. However, Alaska Statute (AS) 38.05.275 allows State mining claims to be staked on such land.

Is it risky for a miner to stake a State claim on State-selected land?

Yes. The federal government may restrict or deny access to claims on State-selected land. (Remember, this land still belongs to the federal government.) Furthermore, you will lose all rights to your claim under State law if the State never gets its title to the land---a risk that is especially high if the land has also been selected by a Native corporation under the Alaska Native Claims Settlement Act. Also, through the 'overselection process,' the State is allowed to select 25 percent more land that it is entitled to receive. Thus, large amounts of selected land will never go into State ownership.

What is the advantage of my staking a claim on State-selected land?

The staking of a mining claim on State-selected land establishes a preference right against another State locator.

When will I be able to mine a claim located on State-selected land?

The date that the State receives T.A. from the federal government will be the date that your right to the possession and extraction of locatable minerals under State law will begin, provided that the terms of federal approval or classification by the State do not prohibit mineral location.

Do I need to perform assessment work on a claim staked on State-selected land?

No. Because the State does not own the land on which your claim is staked, the Division of Mining cannot require you to perform assessment work for your claim. Your obligation to comply with the statutes and regulations governing mining in the State of Alaska begins on the date the State receives T.A. Therefore, your first assessment year begins on the first day of September following the date the State receives T.A.

Will the Division of Mining inform me when the State receives T.A. to the land where my claim is located?

Although this division will attempt to notify you when T.A. has occurred, it is ultimately your responsibility to be aware of the status of the land on which your claim is located. We advise you to check with the Bureau of Land Management (BLM) annually to find out whether the land has been T.A.'d or patented to the State of Alaska. You should also contact the BLM for further information concerning any conflicts with pre-existing rights (Native Allotments, valid federal mining claims, etc.) that would nullify your claim.

Will my claim on State-selected land be plotted on the State status plats?

Yes, your claim will be plotted on the State status plats as soon as possible. However, all documents pertaining to your claim (location certificate, affidavits of annual labor, etc.) will be accepted by this office for filing purposes only and will not be reviewed until the State receives T.A.

Where can I get answers to questions not covered in this fact sheet?

If you have any questions, please contact the Division of Mining office nearest you, and one of our staff will be happy to assist you.

Fairbanks:

794 University Avenue
Fairbanks 99701
(474-7062)

Anchorage:

.555 Cordova, Room 22
Anchorage 99501
(276-2653)
.3601 C St., 10th Floor (Suite 1008)
Anchorage 99503
(276-2653, ext. 2205)

Juneau:

400 Willoughby, Suite 400
Juneau 99811
(465-3400)

Ketchikan:

State Office Building, Room 205
Ketchikan 99901
(255-4181)

Governor Sheffield announces placer-mining demonstration grants

(from All-Alaska Weekly, Apr. 5, 1985)

Seventeen Alaskans have been awarded innovative placer-mining demonstration grants from the Departments of Environmental Conservation and Natural Resources, Governor Sheffield announced Saturday.

The program, created last July, provides funds for research in innova-

tive placer-mining methods to decrease environmental damage from placer-mining operations, reduce water pollution, and improve the recovery of fine gold.

"This program provides a perfect opportunity for the creative and environment-conscious placer miner to put his ideas to the test," Sheffield said. "Hopefully, the grants will not only help to clean up those waterways affected by placer mining, but will also give us information on new and effective means of disposing of such mining wastes as sludge tailings and overburden."

A total of 81 grant applications were received by the February deadline, with a total price tag of about \$7 million.

The Placer Mining Grants Review Committee reviewed the applications and recommended that 25 grants, totaling about \$2.4 million, be awarded.

Eight miners received grants from both agencies. Nine received grants from one department. All grants will be administered by the Department of Environmental Conservation.

Sheffield said those projects that proposed to test mining techniques to reduce water use received special consideration. Some of these methods involve recycling wastewater to reduce the amount of silt and sediment dumped into streams and thereby reduce damage to valuable fish-spawning beds.

Projects that address a more efficient means of fine-gold recovery also received special consideration. "More efficient fine-gold recovery will hopefully reduce the need to re-mine gold-rich valleys in future years," Sheffield said.

Placer miners receiving grants are: Red Olsen, Central; Harold Ellingson, Fairbanks; Ed Schmidt, Fairbanks; Steve Weber, North Pole; Robert Ault, Anchorage; George Cochetas, Fairbanks; Del Ackels, Fairbanks; Mike Mark Anthony, Anchorage; Leonard Kragness, Anchorage; John Hayhurst, Anchorage; Bob Young, Tal-

keetna; Fred Wilkinson, Fairbanks; Hawley Resource Group, Anchorage; Karl Hanneman, Fairbanks; Walter J. Martin, Anchorage; and Don Sanders, Anchorage.



Mining-rights struggle

(from Fairbanks Daily News-Miner, Mar. 29, 1985)

Alaskans can successfully fight national economic and regulatory trends that have put the United States mineral industry on the rocks, said former Nevada U.S. Representative James Santini.

Santini spoke before about 380 people at the Conference on Alaska Placer Mining banquet.

Alaska has a unique opportunity to mold or change the regulations that are plaguing the mining industry in other parts of the country, Santini said. "Alaska's in a position to do something about it. The spirit, the life, the vitality (here) is the closest thing to the political environment I would like to see in Washington, D.C.," he said.

Santini noted the shutdown last month of the largest open-pit mine in the nation--Kennecott's Utah copper mine--where 2,200 jobs were lost. Five years ago, Anaconda shut down its largest copper mine, located in Butte, Montana, he said. Another major shift has been the purchase of Phelps-Dodge, also a major copper producer, by the Japanese company, Sumitomo.

"That is not an encouraging scenario for a nation that wants to... keep its head above water," he said.

Alaska placer miners, many of whom are attending the conference, have been struggling against state water-quality regulations for several years. Miners say those limits cannot be met and want them changed.

"Water quality is a solvable problem," Santini said.

Santini represented Nevada in congress from 1974 to 1982, serving as chairman of the Mines and Mining Subcommittee. He was once called

"Mr. Minerals" by Arizona Rep. Morris Udall.

Santini said Alaska should form a separate state mining agency. Nevada formed such a department in 1983 as a 'buffer' or 'defense' against the numerous attacks on mining, he said.

He also encouraged miners to get involved in the numerous federal and state land-management plans being written this year and in years to come.

"You have a chance to put the local people's opinions into the federal decision making," he said.

Education of citizens and students is another important goal, Santini said. Miners also need to unify into advocacy organizations and to act both collectively and individually as representatives of their industry, he added.



Cook Inlet royalty gas to increase state coffers

The state of Alaska's royalty income from Cook Inlet gas is expected to increase by more than \$8 million annually, said DNR Commissioner Esther Wunnicke in mid-March.

The expected increase results from notices sent to five petroleum companies owning state oil and gas leases in the Cook Inlet area. The statements inform the lessees that the state will no longer accept royalty valuation based on long-term contract prices that are significantly below current market value.

"We have taken this action to assure full and proper royalty collection for the benefit of the citizens of Alaska," the commissioner said.

The petroleum companies receiving the notice of royalty revaluation through DNR's Division of Oil and Gas were Atlantic Richfield, Chevron, Marathon, Shell, and Union Oil. Notices to the companies were sent on March 19.

Rather than allowing the lessees to value the state's royalty share of

gas according to long-term contract prices that have been eclipsed by escalating values, the state will insist on receiving royalty based on current market values.

The impact of this policy is illustrated by examining two major long-term Cook Inlet gas contracts. Under one set of existing contracts, originally negotiated in 1965 and renegotiated in 1973, gas is sold for about 21¢ per thousand cubic feet (mcf). Under a second contract, negotiated in 1960 and most recently amended in 1975, gas is sold for about 61¢/mcf. By contrast, other gas from the same Cook Inlet fields currently sells for about \$2.05/mcf under contracts negotiated in December 1982.

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Our Gangue....

By Frank Larson, editor

Rodney Dangerfield is right, you know. You get no respect...For instance, in my quarter-century of editing documents of one kind or other, your canescent scribe has yet to pen something in his own name. He has yet to see his pseudonym, Q.T. Larson, in print. (The Q.T. stands for Q-tip.) Not once have I been listed in a bibliography of Alaskan geology---or any other kindUntil now. So kick back and read the unexpurgated manuscript of the event that rocked the archaeological world, 'A prehistoric ablation site near Fairbanks, Alaska,' by Q.T. Larson, Principal Investigator...INTRODUCTION: On May 9, 1982, a DGGs archaeological reconnaissance party surveying the eastern sector of the Alaska's Golden Heart City for signs of early-man activity reported an astounding prehistoric landform.... LOCATION: At the northern confluence of the Chena River and the Noyes Slough, lat 64°58'59" N., long 157°45'46"E, T. 33 W., R. 74 E., sec. 23, ½S. ½W. (or, in the argot of the geologist, "behind Burger King"), on the SSE bank of the river, on a NNW-trending SSE strike of N. 12° E. and a dip of 47° NE. (geologese for "by your

left foot, dummy") lies a unique sub-arctic archaeological site. Macroscopic inspection---followed by a 3-min hydrostatic depth test in the dense, poorly drained alders (*Alnus*, spp.) and willow (*Salix*, spp.)---led the principal investigator and his field assistant, the ubiquitous 'Slade' (Our Gangue, 7/84) to unanimously agree: there was, indeed, a hole in the ground there.... A site-specific examination indicated that the hole was not typical of other interior Alaska holes; a subsequent literary research confirmed our initial observation: the hole was not a hole at all, but a pit. It had been excavated manually, apparently with blunt, nonmetal entrenching utensils. The pit measured 3.1 m long by 2.2 m wide. The sides of the pit were relatively straight. They varied less than 2° from top to bottom and left to right, as viewed from the slough side (fig. 1). The volume of the pit and its contents were not determined during the initial reconnaissance. (Two weeks later, however, three UA grad students---one a coed---were seen arm wrestling for the right to base an M.S. thesis on it.)....



Figure 1. Pit (plan view).

CONTENT: The primary interest in the pit---other than its location and immediate purpose---lies in its content. Floating atop its meteoric water (see Geochemistry discussion) were two objects that appeared to be intended for the ease and succor of early Alaskan Homosapiens....GEOCHEMISTRY: Geochemical analysis by the DGGs Assay Lab substantiated the preliminary observation. A subsequent DGGs Assay Lab report (No. XRF-1) added, "it was filled with a natural solution, meteoric water (9°C, <1 lpm flow)"....RADIO-CARBON DATING: In early 1985, the UA-DGGs Geochronology Laboratory confirmed our initial observation. The hole on the riverbank was indeed a

pit, and the objects floating in it were of mid-20th-century provenance. K-Ar age dating indicated that the objects were seat cushions from the rear seat of a now-extinct vehicle, possibly a 1950(±5) Nash Rambler... CONCLUSION: The pit at the northern confluence of the Chena River and the Noyes Slough was an early-man carwash ...ACKNOWLEDGMENTS: I thank my field assistant, Slade, for his cartography and his indefatigable pursuit of geological truth. I also thank geologist T.K. Bundtzen (DGGs) for his thoughtful critique of this manuscript; the Anchor Steam Company, which provided the primary impetus (study grant no. 6/12-oz) that led to the discovery of the archaeological feature; and numerous DGGs historians and archaeologists, who helped me find Burger King. ...In recent happenings about The Last Frontier, UA-Soldotna received a \$56,000 grant from MSHA to help train employees and operators of small mines. The grants will enable small miners to receive safety training, said Ass't Sec'y of Labor David Zeeger....You say you're in downtown Anchorage and want to drop by the District Recorder's Office to file a claim? Well, don't bother going to old Austra-Alaska Building at 4th and K. The Recorder moved (during the day, unlike the Baltimore Colts) to the 11th floor of the Frontier Building, one floor above the DNR mining-information office and three above DGGs. Their address is now 3601 C St., Ste. 1134, zip 99503. The new phone numbers are 786-2243 thru -2248. ...Runnerup in the 'Hard to Hit a Moving Gummint Target' category goes to the U.S. Bureau of Mines, who moved, too (also during daylight). Their Alaska Field Operations Center is now at 201 E. 9th Ave., Ste. 101, Anchorage 99501 (ph. 261-2455)....Winning third in the same category is the U.S. Geological Survey, which appointed Don Grybeck as Chief of its Alaska Branch. He succeeds Tom Miller, who recently completed his 5-yr hitch....Honorable Mention goes to the BLM, who didn't

move. But, in keeping with the times, they changed address anyway. Their northern-office address is now 1541 Gaffney Rd., Fairbanks 99703 (same phone numbers)...If you're in Juneau and you hear a train coming, I suggest you run. Fast. And downhill. On Feb. 26, hundreds of tons of snow rumbled down 3,576-ft-high Mount Juneau, stopping within yards of several capital-city homes. The slide, which snapped a telephone pole and nearly buried a garage, started near the 2,000-ft level and tumbled down a barren avalanche path carved above one of Juneau's oldest residential areas... The village of Tuluksak will appeal a recent federal ruling that allowed Northland Gold Dredging to continue its dredging operations on the Tuluksak River, north of Bethel. The BLM approved a Northland plan to dredge a channel and reroute the river, a salmon-producing tributary of the Kuskokwim. Villagers and fish biologists both oppose the project, fearing damage to the salmon habitat....In news from the petroleum front, new oil fields on the North Slope will not supplant the inevitable decline of Prudhoe Bay's production during the next decade, said a UA-Anchorage study. Onshore production will decline about 65 percent by the year 2000; the new, smaller fields will also begin to drop about that time, the study says....In February, Exxon USA plugged and abandoned its first well on the Antares Prospect in the Beaufort Sea. The drilling site was in 50 ft of water about 115 mi NW of Prudhoe Bay. A directional well will be drilled from the same location to further test the prospect....The joke of the month has to do with a calvary soldier who went in to see the camp physician. "Doctor," he said, "I'm having two dreams that recur on alternate nights. One night I dream I'm being held prisoner in a teepee, and the next night I dream I'm being held prisoner in a wigwam. What's wrong with me?" / "It's simple," the doc replied. "You're two tents."....Cheers.

Metals Market

	<u>April 22, 1985</u>	<u>3 Months Ago (1/21/85)</u>	<u>1 Year Ago (4/18/84)</u>
Antimony metal per lb (NY dealer)	\$ 1.35	\$ 1.28	\$ 1.20
Beryllium ore, stu*	\$ 96-106	\$ 96-106	\$100-130
Chrome ore per long ton (Transvaal)	\$ 48-52	\$ 48-52	\$ 48-52
Copper per lb (MW-prod)	\$ 0.71	\$ 0.64	\$ 0.76
Gold per oz (Handy & Harman)	\$ 329.77	\$ 303.40	\$ 354.65
Lead per lb	\$ 0.20	\$ 0.18	\$ 0.26
Mercury per 76-lb flask	\$ 299.00	\$ 318.00	\$ 364.00
Nickel per lb (cathode)	\$ 2.44	\$ 2.25	\$ 2.60
Platinum per oz (MW NY dlr)	\$ 285.00	\$ 270.00	\$ 334.70
Silver per oz (Handy & Harmon)	\$ 6.51	\$ 6.10	\$ 7.13
Tin per lb (MW composite)	\$ 6.07	\$ 5.70	\$ 6.59
Titanium ore per ton (ilmenite)	**	**	\$ 70-75
Tungsten per unit (GSA domestic)	\$ 59.76	\$ 61.31	\$ 92.66
Zinc per lb (MW-US PW)	\$ 0.45	\$ 0.45	\$ 0.35

* - Standard ton unit (20 lb).

** - List price suspended.

Alaska Department of Natural Resources
Division of Geological & Geophysical Surveys
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(Basement)
Fairbanks, Alaska 99701

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