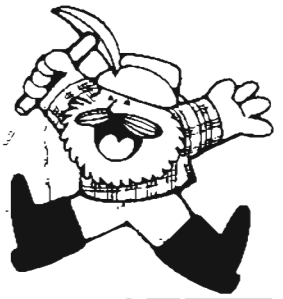
STATE OF ALASKA

Department of Natural Resources

Division of Geological & Geophysical Surveys



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**Mining information office.*

Recent Eruption of Augustine Volcano

By Robert B. Forbes, UA Geophysical Institute

Explosive activity at Augustine Volcano, as measured by University of Alaska Geophysical Institute infrasonic stations, began on the afternoon of Jan. 22, 1976. At 0745 AST the next morning, the first major ash eruption occurred. A second major explosion and ashfall followed at 1645 AST that afternoon. At least five major eruptions took place during the following 3 days. Ash clouds penetrated the tropopause, reaching heights of 14,000 meters as measured by ANR height-finding radars. A light dusting of ash (about 1/16 of an inch) fell at Anchorage. Ash also fell at Iliamna, Homer, and Seldovia, Alaska.

Microearthquake swarms and occasional explosions had been noted on the volcano since middle October. Island seismographs, presumably damaged by premonitory activity, stopped telemetering data about 1 week prior to the main eruptions. However, a strong increase of earthquake activity was recorded on Jan. 22 on University of Alaska and USGS seismic stations located on the mainland west of the island volcano.

Intense swarm activity accompanied the main eruptive phase. Lahars, mudflows, and pyroclastic flows have descended the slopes of the volcano, and some have reached the sea. Vent clearing and subsequent explosions have removed much of the 1963-64 dome, resulting in a crater which is breached to the north.

The Burr Point research station (northwest tip of the island) was severely damaged by blast and thermal effects of one or more nuee ardentes and scoria and ash fall. Temperatures greater than 400°C were measured 9 feet below the surface of a pyroclastic flow east of the research station during the quiet period which lasted from Jan. 27 to Feb. 6.

Chemical and petrographic analyses of the first (Jan. 23) ash fall as sampled at Seldovia and Iliamna indicates that initial melt accompanying the vent breaching explosions was dacitic andesite, as documented in the following partial chemical analysis (in weight-percent):

SiO_2	-	63.8
Fe_2O_3	-	2.1
FeO	-	2.0
MgO	-	2.1
CaO	-	5.1
Na_2O	-	3.9
K_2O	-	1.3

Following the relatively quiet period, explosive activity was renewed at approximately 0450 AST on Feb. 6; this was documented by infrasonics and by another ash fall along the northwest margin on the Kenai Peninsula. Pilot reports and infrasonic signals indicate that explosive eruptions, including the emission of turbulent ash-charged clouds and accompanying nuee ardente activity, continued until the week of Feb. 16-20.

Airborne magnetic and photographic surveys of the

volcano were completed by the Geophysical Institute before activity was resumed on the 6th.

Seismic stations are being repaired and reactivated with the help of State funds made available through the State of Alaska Geological and Geophysical Surveys. Personnel on the Augustine Volcano research group were J. Kienle, R.B. Forbes, D.B. Stone, D. Lalla, and D. Johnston, all of the UA Geophysical Institute.

Geochemistry as a Prospecting Tool
by Alfred F. Trites

(This is the seventh of a series from The Mining Record [Jan. 22, 1975]. The author is a consulting geologist in Denver—Ed. note.)

Visualizing the Geochemical Results

After you have determined the background values of the element(s) in your soil samples and have assured yourself of the presence of anomalously high values, your next step is to visualize the results. You will then use this representation to interpret the values of the chemical elements with respect to the presence of possible buried ore bodies.

If only a single traverse or a few widely spaced traverses have been made across the area, you may find it best to prepare a soil profile of each element determined along each traverse. Using coordinate or grid paper plot the distances along the horizontal axis and the element content in parts per million along the vertical. If the values range from a few parts per million to hundreds or thousands of parts per million, you may have to use a semi-logarithmic paper which compresses the vertical, thereby enabling you to get them all on your paper. Such a graphic representation of the results is often used in reconnaissance work to determine which elements are best suited to show differences in metal content of soil samples across a buried vein. Where several elements are being compared, the soil profiles may be plotted one beneath another with the horizontal distances in the same position. From these aligned profiles it is easy to select the element or elements showing higher values over the buried vein.

As mentioned under sampling methods, you should have a map which you have compiled either in the field or from your notes showing the sample locations. This map could include whatever geology you were able to note as you conducted the work. The values of the elements determined can now be added to this map. If you have more than one element you may find it more helpful to use a different copy of the map for each element.

In place of numbers various symbols may be used for groups or intervals of elemental values. Open or closed circles of different sizes may be used to represent values falling into the groups which you select. Instead of varying the size of the circles you may prefer to darken 1/4, 1/2, 3/4 or all of the circle to show various groupings of values. Other geometric figures, such as squares, hexagons, triangles, or even combinations of these, could be used. With such symbols you can easily visualize mineralized trends or centers of mineralization in which the highly anomalous values have fallen. If you want to be even more elaborate, you can prepare such maps on transparent paper so that you can overlay the map of one element over another to show the relationships. Sometimes symbols are combined with number values to show two or more elements on the same map.

Whenever I have a sufficient number of samples over a given area, I personally prefer a type of contour map, or iso-value map, of the geochemical values. If the values for a given element fall into one or more groupings above the background, I draw lines marking the boundaries of these groups, interpolating between sample locations wherever needed. A danger exists in this method if the sample locations are too far apart. Only as you obtain a "feel" for the geochemistry and the geology of an area are you able to determine how far you can extend contour lines to include points having similar values. I consider it best to take the conservative approach and to draw lines around individual highs where I am uncertain of the ground in between them. Sometimes it is possible to collect additional samples in the field to fill in between the highs. The enclosed areas of the various levels of element concentrations can then be colored distinctively. The geochemical maps of the various elements can be compared by placing one beside the other or as overlays if transparent paper is used.

Zonal Feature of Ore Deposits

I have alluded to zoning in ore deposits but it is of such importance that it should be discussed somewhat more fully. A number of ore deposits have characteristic zonal patterns. These patterns very commonly take the form of higher temperature mineralization in the proximity of igneous masses, grading outward into lower temperature minerals. The distances across such zonal arrangements may be measured in thousands of feet or even miles.

One rather typical type of zoning consists of copper mineralization, sometimes with molybdenum, in a central area or core. Surrounding this core is an intermediate zone characterized by medium temperature lead- and silver-bearing veins. This in turn is surrounded by an outer zone of low-temperature gold veins. The wise prospector is on his toes seeking clues for such mineral zoning and will take advantage of those chemical elements which may be diagnostic of temperature differences in ore deposition.

The elements used in geochemical prospecting can be divided into two basic groups. The first group consists of those elements being sought. The second group, termed "indicator elements" by some geochemists, are not directly sought but are found useful by virtue of

the fact that they are *often* found in wide dispersion haloes surrounding ore bodies. It should be borne in mind that such haloes were formed as wide spheroids completely enveloping the ore bodies. If erosion has advanced to the stage of stripping off the upper portion of the halo, the higher temperature ore mineralization may be exposed at the surface where it is not covered by soil. On the other hand, if erosion has not removed the outer shell, the ore deposits may be concealed beneath hundreds or thousands of feet of rock barren of ore minerals but containing abnormally high amounts of the indicator elements. Such indications of buried mineralization are much sought after by the better financed mining companies following their delineation by geochemical and geophysical methods.

Considerable research is currently being conducted on chemical elements and even gases as indicators of mineralization. At the present time, mercury and fluorine have the greatest practical use to the prospector and the presence of abnormal amounts of either of these in the soil should make his ears prick up.

Gold Reserves are Confirmed

(from Fairbanks Daily News-Miner, Feb. 2, 1976)

The Alaska Gold Co. has told its shareholders last summer's dredging operations in the Nome area have confirmed that gold reserves on their land holdings appears to total at least 1.2 million ounces.

Alaska Gold Co.'s Number Five dredge, which operated for 117 days in the Nome area last summer, recovered 7,791 ounces of the precious metal after processing of 740,391 cubic yards of gravel.

Dredge operations got underway July 11, and the company said that without the late start, the dredge could have reclaimed 12,000 ounces of gold. Dredging operations usually begin in Alaska in May and continue through early November.

The company says it has not sold any of its gold finds and has no commitment to sell the metal which is selling for an average price of about $130 per ounce on the international market.

Last summer's dredging operation called for activation of a second dredge—number six—but supplies and equipment necessary for that operation were abroad the barge Kokohead when it capsized en route from Seattle to Nome last August, so those plans were postponed.

The prospective value of gravel in the area where No. 6 will be working is richer than the land where No. 5 was active, Alaska Gold said. The company predicted that if the second dredge had been operating in August, Alaska Gold could have reaped 7,000 more ounces of gold by the end of the season.

Plans now call for dredge No. 6 to begin operations this May.

Alaska Gold is a subsidiary of UV Industries of Salt Lake City, Utah. The parent company manufactures, among other things, electrical equipment and fabricated copper and brass products.

Alaska gold maintains another dredge operation at Hogatza on a tributary of the Koyukuk River in north central Alaska between Nome and Fairbanks. The company said that between May 14 and October 17, some 3,360 ounces of gold were recovered from that operation.

Union Postpones Exploratory Well

(from Fairbanks Daily News-Miner, Jan. 19, 1976)

Union Oil Co. has put off until next winter its proposed exploratory well in the Beaufort Sea near Jones Island in Harrison Bay because the company hasn't obtained an Army Corps of Engineers drilling permit in time to begin drilling this winter.

Bob Anderson, a spokesman for Union Oil, said objections raised by the North Slope Borough were responsible for the delay in the permit.

Union Oil officials are going to Barrow Feb. 2 and 3 to explain the project to the borough's planning commission, Anderson said.

The well, on a state oil and gas lease, was intended to supply Union with information it wanted in preparation for bidding at a Beaufort Sea lease sale which the state says is probably going to be held this year.

Mapmakers Updates Arctic Slope Lease Map

The Mapmakers, a cartographic firm in Anchorage, recently updated their colored lease map of the Arctic Slope. The map (scale 1 inch equals 4 miles), which contains previous features such as lease owners, expiration dates, well location and units, also shows some offshore detail. It also shows the northern boundary of the areas under consideration for lease in the Beaufort Sea. Details may be obtained from them at Box 145, Anchorage 99510.

Martin Believes State May Get Pet-4 Tracts

(from the Anchorage Times, Feb. 6, 1976)

The state may be able to make spot land selections in Naval Petroleum Reserve No. 4, Natural Resources Commissioner Guy Martin said yesterday.

Speaking to the House Finance Committee, Martin said the state may be able to do this because of recent Department of Interior lands orders. He said this was learned only last week and his department is checking it out.

Martin did not elaborate for the committee but included his comments in statements he and his lands director, Mike Smith, had been making on the land selection process.

Smith told the committee the state has been re-

ceiving 750,000 acres a week in tentative approval or patented lands, which had already been selected by the state, since Christmas.

At this rate the state should have title to 50 million to 55 million acres this year.

The state is entitled to select up to 104 million acres of federal lands under the Statehood Act.

Martin told the committee that his department is putting together "a balanced policy" on lands selection which should be ready for "wide public circulation" in 60 to 90 days.

Martin said the state needs "criteria that is defensible and balanced" if it is to choose its lands wisely when the selection process opens up again.

The state has approximately 37 million acres left of its allotment, he said.

Forest Services Proposes Three Kenai Peninsula Recreation Areas be Closed to Mining

(from a BLM news release, Feb. 10, 1976)

The U.S. Forest Service proposes that three of its prime recreation areas on the Kenai Peninsula be closed to mining to protect them for public recreation uses.

The three sites, which total 1,035 acres in size, are heavily used for public recreation. Because the Forest Service considers recreation to be their highest use, it proposes that these lands be withdrawn from the action of mining laws.

The Russian River Recreation Area is in the Russian River drainage, which receives more recreational use than any other part of the Kenai Peninsula according to Forest Services records. Both the Russian River Recreation Area and the Copper Lake Recreation Area, which is also on the northern Kenai Peninsula, have public campgrounds and picnic areas.

The Juneau Falls Recreation Area is an important access point to the Resurrection Pass trail. It has a public parking lot and scenic outlook in addition to campground and picnic areas.

A notice of the proposed withdrawal will soon appear in the Federal Register. After publication of the notice, the public will have a 30-day comment period. All comments on the proposal should be addressed to the State Director, Bureau of Land Management, 555 Cordova Street, Anchorage, Alaska 99501.

Kleppe Overrules Gulf Objections

(from Fairbanks Daily News-Miner, Feb. 18, 1976)

Interior Secretary Thomas S. Kleppe today announced that the oil and gas lease sale will go ahead in the northern Gulf of Alaska this spring, despite environmental and state objections but the secretary said the sale will occur on a reduced area of 1.1 million acres.

In a letter to Russell Peterson, chairman of the Council of Environmental Quality, Kleppe said he had decided the sale must go forward, probably in April, to fulfill the nation's need for new energy supplies.

But Kleppe said the area open for bidding by the major oil companies will be reduced by approximately 40 per cent to meet the objections of environmentalists, the State of Alaska, and local fishermen.

The announcement is a sharp blow to the hope of environmentalists, who saw the Gulf of Alaska sale as a key test of the weight of their arguments that pristine areas should not be leased without extensive analysis.

The decision may also prove to be the first test of how much teeth the National Environmental Policy Act really has.

"We don't think the Environmental Protection Agency of the Council on Environmental Quality can overrule us," one knowledgeable Washington source said today. "But then we don't really know, because we've never been tested."

Kleppe directed the Bureau of Land Management to draw up its notice of sale and issue it as soon as possible. But because of the many stipulations involved, Interior sources said the notice will probably not go out until March.

Under the law, the lease sale cannot begin until 30 days after the notice is issued.

Permit Rule Skips Placers

(from the Anchorage Times, Feb. 6, 1976)

Miners won't need one more government permit after all to dredge for gold in Alaskan waters.

The miners and the Army Corps of Engineers, Alaska District, both had expected that new corps regulations required a permit before any fill or dredged material can be dumped into U.S. waters would apply to gold dredging.

The new regulations carry out Section 404 of the federal Water Pollution Control Act.

The corps and the Environmental Protection Agency, however, now have determined that placer mining doesn't constitute dredging. Instead, mining falls under the umbrella of the Environmental Protection Agency, which administers Section 402 of the federal Water Pollution Control Act. Section 402 provides for national pollutant discharge elimination system permits.

Paul Chatari, chief of the regulatory functions branch of the Alaska district, said yesterday he had just learned from corps division headquarters in Portland that gold mining won't need Section 404 permits. A member of his staff on Monday had addressed a luncheon meeting of the Alaska Miners Association to explain how the no-longer-needed permit system would work.

Chuck Hawley, president of the state miners association, said late yesterday that it would be a "tremendous help" to be out from under the provisions of

Section 404. He said miners still must obtain permits from at least four state and federal agencies, before dredging operations can be carried on.

Hawley added that miners will "still be under a lot of pressure of conservation groups," who he said "believed that with Section 404 they had finally got the tool to stop the miner. But the corps says "No, they haven't got it yet."

Hawley said, "We haven't seen the end of this," adding that he wouldn't be surprised to see further court action by conservationists.

Acting under the assumption that permits would be needed for gold dredging, the Alaska District had accepted a permit application from Bliss and Sons of Anchorage to operate a gold dredge in the Ungalik River, east of Norton Bay at the southeast corner of the Seward Peninsula. The District Engineers on Tuesday issued a public notice of that application which states that similar dredging operations have been in operation on the Ungalik since 1937.

No matter which section of the federal Water Pollution Control Act applies to the miners, they are subject to some stringent penalties if they fail to obtain the necessary permit, and are found guilty of polluting a waterway.

The act calls for civil fines of up to $10,000 a day for the first offense and $20,000 for the second offense. And if the offender is found to be guilty of a criminal misdemeanor, the fine levied can be up to $25,000 a day and-or one year in prison for the first offense, or $50,000 a day and two years in prison for the second offense.

Correction....

In the last Bulletin, one column in Table 2 of C.N. Conwell's article, "Healy Coal Field Analyzed" was in error. The column should have read:

Sulfur(%)
0.20
0.17
0.20
0.25
0.20
0.25
0.19
0.14

Northwest Mining Association Aids Mining Laws in Alaska

(excerpts from the Western Miner, January 1976)

Long established in the Pacific Northwest, the Northwest Mining Association held its 81st annual convention in Spokane, Washington in December 1975. The size of this gathering (some 1050 registrants plus up to 300 student members and ladies) at times taxed the resources of the venerable Davenport Hotel.

In the general sessions there was the now customary discussion of the effects of government policies, and a warning of the effects of public land withdrawal on the future availability of minerals in the United States. Financing of new mines, gold-silver, and the program of the USGS in the Northwest were other topics.

Looking at the Northwest in more detail, the regional development session included talks on exploration and development in Alaska, British Columbia, Washington, Oregon, Idaho, and Montana.

The non-metallic industry of the Northwest was reviewed, with contributions on uranium geology and exploration; silica rock and sands; limestone and lime products; sand and gravel; clays and their uses.

Sessions on the second day were well attended, despite it being Saturday and following a more than mild celebration on Friday night. Exploration, mining and metallurgy were covered in separate meetings, and the technical gatherings wound up with discussion of common problems with other basic industries (power, cattlemen, woolgrowers), and a panel discussion of mineral taxes. A student session provided information on careers in the mineral industry.

SUCCESS IN ALASKA

In recent months the NWMA (with the Alaska Miners Association and others) has been actively fighting the mining severance tax (SB 294) which had been proposed by Alaska Governor Jay Hammond. This amounted to a mineral royalty similar to that operating in British Columbia under 'Bill 31' and the mineral land tax act. Indeed, the Alaska Taxation Committee of the NWMA used some BC data in support of their arguments against a severance tax.

'Mineral taxation — Alaska' is a report of studies by the committee, and is a useful reference base for facts about the economics of the mineral industry, even beyond the particular region of interest.

As the result of joint efforts of many concerned people, it now appears that Governor Hammond's SB 294 will be dropped, though the state sees the need to establish 'an equitable mining tax structure in Alaska in an atmosphere of objectivity'. The Governor has stated the need to establish the structure before the industry becomes fully operational, because 'it is not fair to change the rules once the investment is committed'.

One hopes that this attitude will prevail for the mining industry in Alaska. Certainly the intention is laudable, but what of the achievement in the face of recent political swindles in the Western provinces of Canada, where the ground rules have been changed, with potentially disastrous results, at the whim of irresponsible minorities.

Alaska is perhaps in the position once enjoyed by the Canadian provinces—in the very early stages of potential

mineral development, when it is expedient for the politicians to encourage growth as a source of wealth. Since the closure of the Kennecott Copper operations in 1938 there have been no hard rock mines working in Alaska, and the main activity is in a coal mine and several gold dredges. Of the $60-million generated by 'mining' in Alaska, some $37.8-million comes from sand and gravel operations, not normally included under 'mining'.

However, it is estimated that, over the past 30 years, mining companies have spent over $100-million on exploration in Alaska, without return so far. The knowledge gained from this work offers considerable potential for development, given the right tax and operating conditions.

ALASKAN DEVELOPMENT

Speaking about mineral development in Alaska, Milton Wiltse (Alaska Division of Geological and Geophysical Surveys) noted the results of a survey made among 85 companies known to be working or to have worked in the state. Although the figures are not absolute, for various reasons, one may conclude that some $34-million was spent in Alaska during 1975 on the initial phases (mainly exploration) of the hard minerals industry.

From extrapolations one may conclude that 1053 men were involved; exploration programs averaged $395,000 each for a period of 109 days (field season). For development work a similar average cost per program is indicated, over a rather longer working season (125 days). Apart from the Alaska peninsula (8%), the distribution of mineral ventures in various parts of the state is fairly consistent, though different land types receive a range of degrees of interest. The division of attention is: federal lands 46%, state lands 39%, native lands 8%, private lands 7%. The native corporations are still selecting lands, and less than 2% of Alaskan lands are in private ownership.

One can only make a subjective assessment of the social and political operating environment for mineral development. Society has created a 'social engineer' concerned with the nation's future life style. Public lands are a natural target for this concern, notably in Alaska, where lands are large and population small.

More than 371-million acres of land will be divided among three major landlords (federal, state, native) who will engineer its use and development. At present, only 67.5-million acres (18%) of Alaskan lands are open to mineral entry under the 1872 mining law. Only 5-10 million acres of this have unrestricted mineral entry, with the remainder being limited to the location of metalliferous deposits. Patented state lands now open to mineral entry add about another 40-million acres of land accessible to the mining industry. That is, about 29% of Alaskan land is available for mineral entry via the staking of claims. The future of land controlled by native corporations is not known.

Although the National Forest Service has traditionally followed a policy of multiple use of lands under its control, there are various moves in the offering which may complicate the issue, as well as that of the National Park Service (including the large McKinley park and others).

There exists considerable confusion throughout the government about desirable land use. There is no single coordinating body to sort out the bureaucratic special interests, but the Commissioner of Natural Resources, Guy Martin, is making efforts to sort out the direction of divisions in his own sphere of responsibility.

There is no minerals policy as such in the state of Alaska. Though there are many factors to be considered, the frustration of lack of policy could also be an opportunity for the minerals industry.

It is believed that government would welcome thoughtfully prepared and clearly presented recommendations concerning all aspects of exploration and development from the mining community. There would be hard discussions, and not all the input would result in favourable action.

'However, to do nothing is to allow to develop the false consenus that the mineral industry desires nothing.'

TAXATION HEARINGS

At a two-day meeting in November 1975 between Department of Revenue Commissioner Sterling Gallagher and spokesmen of the mining industry, native corporations, and service industries, there resulted an apparent consenus that the severance tax should be withdrawn from further consideration (as mentioned above); that economic incentives for mining investments should be further discussed; the mining license tax should be revised to better define what income is applicable to taxation under the law; the 3-1/2-year tax-free period and the depletion allowance deduction should be retained in the mining license tax; and the state should make a clear statement on industrial stability, and establish a policy of tax stability.

A draft of an amended mining license tax bill was to be circulated during December before being submitted to the legislature in January 1976.

DGGS Issues New Geologic Report

Geologic report 44, "Uranium investigations in Southeastern Alaska," by Gilbert R. Eakins, DGGS Chief Mining Geologist, is now available. The report, which is 62 pages long and contains 33 figures and 11 tables, costs $1.00 and may be purchased or examined at any DGGS mining information office (p. 1). The abstract of the report is reproduced below.

Radioactive mineral deposits at 14 localities in Southeastern Alaska are discussed to assist in the exploration for uranium. These areas, visited during the 1970 field season, were selected because of known or reported radioactivity and (or) favorable geology. Vein deposits

and nonmarine Tertiary sandstones were examined. Radiometric surveys were made on foot, and small areas were mapped to show the spatial relationship between radioactivity and certain ore deposits.

Previously unreported low radioactive anomalies were found at several localities, but none of the deposits was indicated to be of commercial grade. Slightly radioactive sandstones were found at Port Camden and on the west side of Zarembo Island. Radioactive pegmatites at Endicott Arm and elsewhere in Southeastern Alaska do not appear to have commercial possibilities, but may serve as guides to mineralization.

Geochemical stream-sediment samples were collected at most of the localities examined. A total of 205 samples were taken. Results of atomic absorption analyses are given for copper, lead and zinc. Strong geochemical anomalies were found at William Henry Bay and Kook Lake.

The best guides for uranium exploration in Southeastern Alaska are soda-rich granite and the ores and gangue minerals frequently associated with uranium. These include minerals containing copper, silver, cobalt and molybdenum, and hematite and fluorite. There is some indication that unusual amounts of uranium minerals are present in zones peripheral to major copper districts.

Also recently released was AOF-95, "Geologic map of the central Healy quadrangle, Alaska," by Robert G. Hickman and Campbell Craddock. The open-file report consists of three blueline plates (one of which is a serial structural cross section). Available from Petroleum Publications, 409 W. Northern Lights Blvd., Anchorage 99503, the report costs $8.40 in person and $9.00 postpaid.

Other documentation available includes the 1974-75 biennial report (53 pages, 10 figures, 3 tables), which is free, and two updated information circulars. The circulars, No. 6, "Alaskan prospecting information," and No. 14, "Mining laws applicable in Alaska," are also free. All documentation is available at any mining information office (p. 1).

Oregon Survey Puts Out Gold Book

The Oregon Department of Geology and Mineral Industries recently published a book entitled "Proceedings of the Gold and Money Session and Gold Technical Session," which was held in conjunction with the Pacific Northwest Metals and Minerals Conference in Portland last April.

The 201-page book is a compilation of papers presented at the conferences—papers dealing with subjects as diverse as Carlin-type gold deposits, placer mining for gold, transport and deposition of gold, and gold and the economy. The book costs $5.00 and is available from the Oregon Department of Geology and Mineral Industries, 1069 State Office Bldg., Portland 97201.

Royalty Oil Surplus Projected by DGGS Staff Members for Board

In a report prepared for the Alaska Royalty Oil and Gas Development Advisory Board, Joanne K. Welch and Patrick L. Dobey projected royalty oil surpluses for the period 1976-1995.

The royalty oil projections range from 7.62 million barrels of oil in 1976 to 95.20 million barrels of oil in 1983. In 1983 Prudhoe Bay reaches its maximum pipeline output of 2 million barrels per day and the Cook Inlet production decline begins to take effect on the royalties received. Over the entire period 1976-1995, the state is projected to receive about 1,418,278,000 barrels of oil from state royalty.

During this same period, Alaskan demand was projected to range from 24 million barrels of oil equivalent in 1976 to 94 million barrels of oil equivalent in the year 1995. The cumulative value for the period yielded a maximum of 1,108,000,000 barrels of oil equivalent.

Royalty oil surplus from Prudhoe Bay was found to range from 7 million barrels of oil in 1978 to 54 million barrels of oil in 1983. Again, in 1983 Prudhoe Bay reaches its maximum pipeline output and the Cook Inlet production decline results in a decrease in royalty surplus. The cumulative surplus for the entire period was determined to be 596 million barrels of oil. The period when supply actually exceeds demand occurs is 1978-1992; before and after this period, demand exceeds supply and no royalty surplus exists. Because the discovery of new reserves of oil from state lease sales or existing leases not yet drilled would affect royalty surplus values, the figures determined in the report represent conservative values.

Mining Law Manual Available in College

Want to be an authority on Alaska's mining laws? The DGGS College office has a 77-page manual by former Department of Natural Resources Commissioner Charles F. Herbert for sale. Published by the UA Mineral Industry Research Laboratory, the "Alaska Mining Law Manual" goes for $4.00, and is intended for use by prospectors, miners, and others who are interested in the search for minerals in Alaska.

The manual is a straightforward book (paperback) with no legalese jargon; reference to statutes are minimal and there is no guide to court decisions. It is intended to guide nonlawyers in acceptable methods of acquiring and holding mineral rights on Alaskan lands.

Claiming Redefined on Recent DGGS Information Circular

Information circular 1, "Proper claim staking in Alaska," was revised recently to incorporate the latest

changes in mining law. Carole Stevenson, mining information specialist, says the following five paragraphs are the "meat and bones" of the IC.

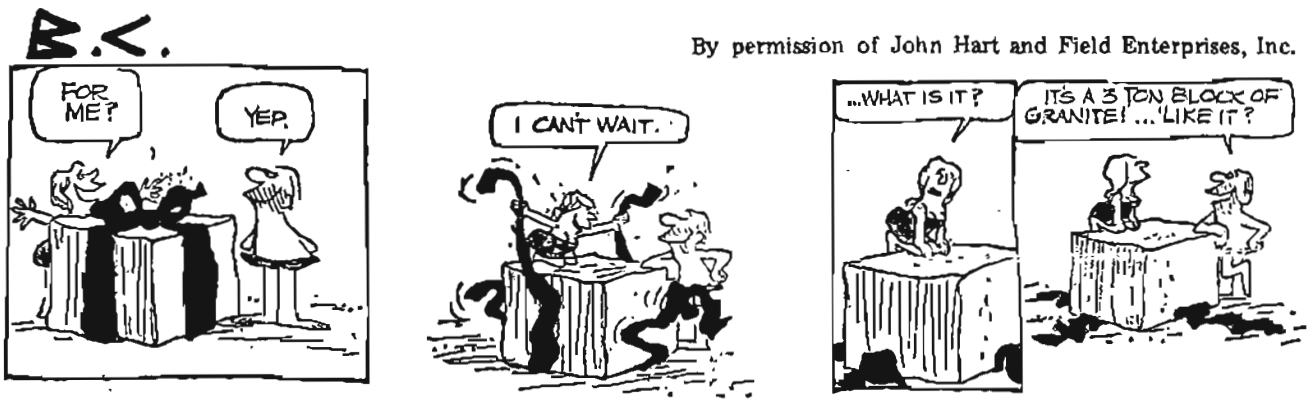
• To legally hold unpatented claims after they are staked and recorded $100 worth of assessment work must be done on each claim during each assessment work year. This work must be done in such a way as to improve the claim or benefit it toward the eventual mining or extraction of minerals. The mere act of cutting brush year after year or annually repairing old buildings can hardly be construed as properly benefitting the claim in the legal sense. Work for a group of claims which are contiguous may all be done on one claim. Costs of tools purchased or transportation expense of tools or personnel to or from the claim are not chargeable to assessment work. The law permits geological, geophysical, and geochemical work on claims to be considered as assessment work under certain circumstances and when done by qualified men. Geophysical surveys to qualify must be made on the ground (aerial surveys not allowed) and must be made by qualified experts using recognized standard instruments and equipment. A detailed report must be filed in the proper recording office (1) the location of the work in relation to the discovery point and claim boundaries (2) the nature, extent, and cost (3) basic findings of survey, and (4) name, address, and professional background of person or persons doing the work. Such surveys may not be applied as labor for more than two consecutive years nor for more than a total of five years on any one claim. No survey may be applied that is repetitive of a previously allowed survey.

• Assessment work to hold claims on State owned land must be done at the rate of $200 per claim per year, but excess work up to $800 worth may be applied against required work during subsequent years. Also, the allowance for geophysical work is broadened to include airborne surveys.

• The annual deadline for completion of assessment work (end of assessment work year) is September 1st at noon. Assessment work is not required for the year during which the claim is staked. As with claim location certificates, assessment work affidavits must be recorded with the recorder of the recording district in which the claim is located. If the assessment work affidavit is recorded within 90 days after the end of the assessment work year, it will serve as prima facie evidence that the work was done. If it is recorded later than this time, or not at all, the burden of proof will be on the claim holder to prove that he did the work in case of some contest over the claim.

• An Alaska law states that the affidavit must be filed within six months after the end of the assessment work year, or the claim will be considered abandoned and will be open to location by others. If no one else locates the same ground within a year after the date of such abandonment, the original locator may then relocate the claim as though it had never been located. The original locator may, however, reinstate his original title at any time by complying with the provisions of the assessment work law if there has been no intervening location by others.

• A properly prepared assessment work affidavit should contain (1) the name and location of the claim and the name of the owner (or owners) of the claim, (2) a statement of the amount of work and kind of work performed, (3) the actual value of the work, (4) the dates during which the work was done, (5) the assessment year for which the work was done, and (6) the circumstances under which the work was done if by other than the owner. The affidavit must be sworn to before a notary public or postmaster before recording it to make it legal. If no notary public or postmaster is available, the person doing the assessment work may certify his affidavit himself "under penalty of perjury." The certification must state the date and place of its execution, the fact that no notary public or other official empowered to administer oaths is available and the following: "I certify under penalty or perjury that the foregoing is true and accurate."



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They Said It...

Ed Hunter, at the end of his article in Alaska Construction & Oil, "Gold Dredges Operate at 400% Cost Increase":

In conclusion, I trust that no poor miner in years to come will have to paraphrase one of Robert Service's verses:

"I wanted the gold and I sought it
I scrambled and mucked
like a slave
Was it famine or scurvy? I
fought it—
I hurled my youth in the grave.
I wanted the gold and I found it
Came out with a fortune last fall
But somehow life's not what I
thought it.
THE STATE TAXED IT ALL.

History of the Katalla Oil Field Reviewed

By W.M. Lyle, DGGS Petroleum Geologist

The Katalla oil field, also known as Controller Bay oil field, was located on the Gulf of Alaska at about lat 60°10' N. and 144°20' W. in a belt about 25 miles long by 4 to 8 miles wide. Now a ghost town, Katalla was the distributing point for Alaskan oil about 40-50 years ago.

Oil seepages in the Katalla area were first noticed in about 1896. Geologic reconnaissance surveys of the area were made by noted U.S. Geologic Survey geologist Alfred H. Brooks in 1903 and 1904; he made detailed topographic surveys over the more promising parts of the field in 1905.

The first well, known as well A, was drilled on the banks of Oil Creek by an English company in 1901. It was drilled to a depth of 270 feet and abandoned as a dry hole. In 1903, the well was deepened to a depth of 550 feet, but still no oil was found. The next year, the Alaska Development Company drilled well 3. Some oil was obtained here and on the next five attempts, but the results were generally discouraging. By 1907, the Alaska Petroleum and Coal Company had drilled its fifth well. Two were moderately successful, and were used to supply fuel for nearby railroad construction.

In 1910, the Amalgamated Development Company obtained control of the property and claims of ADC. Wells were cleaned out and tanks and a pipeline were built. All oil lands were withdrawn from entry in November of that year. The Alaska Coal Company struck some oil at a depth of 700 feet the next year. An experimental refinery was built on Katalla Slough. Four wells were drilled in 1912, and oil was found in three of these. The refinery was placed in production and furnished gasoline and other products.

Production continued sporadically from 18 of the 30-odd wells that were drilled in the next 20 years. In all, the Katalla field produced 154,000 barrels of oil—mostly for local marine use. The refinery was partially destroyed by fire in 1933, and the wells never produced after that. Today, only a few vestiges of the wells and production facility remain in the lonely, wind-swept area.

Our Gangue.....

By Frank Larson, DGGS Editor

Every profession has its innovator, its patron saint, right? Well, how about the poor hard-rock miner? Does he have a da Vinci, Mozart, Edison, or St. Vincent (for you old Packer fans) to look up to?...Actually, few people realize that one of America's most legendary characters was a miner. Yes, you mollers, rejoice, for you can now pay homage to the most famous miner of them all, The Lone Ranger. (Yes, Virginia, the very same one who rode around on the white horse with the thundering hoofbeats and who carried on all those scintillating conversations with the Injun with the monosyllabic vocabulary.) You do not recall this? Let me refresh your memory: The Lone Ranger had silver bullets, right? (No, not the silver bullet you order at the bar that comes with an olive in it.)...Do you know how he procured them? He didn't order them from Tiffanys. He had a secret tunnel leading from the back of his cabin right into a mountain—a mountain loaded with that sonorous, ductile, very malleable univalent metallic element, silver. But, unfortunately for you humble miners, your hero was not the typical everyday miner. Rather, The Lone Ranger was sneaky, antisocial, and secretive. Worse, he was an abstainer—yes, Gangue, a teetotaler....Sure. Ever hear of him asking Tonto to come in out of the hot sun for a cool one? Or riding into a saloon, shouting, "Belly-up to the bar, Boys. I've hit paydirt"? No way. I know for a fact that he got his jollies by sitting on the floor of his shack and rolling little numbers (by "numbers" I mean projectiles) and humming "Home on the Range"...I know this because I faithfully huddled at my grandmother's floor-model radio every night for 9 years, waiting for our masked pansy to kick the Cheerios habit and have a cold one—and, speaking of cold ones, the North Slope is going to be the site of two wildcat wells that will be dug by Texaco under an agreement with Amoco and Union Oil of California. Texaco will have a 60% interest in the two units....More gas was found in Cook Inlet. Cities Service announced a new discovery; gas was tested at a rate of 3.7 million cubic feet per day....Lastly, U.S. Borax & Chemical is preparing to develop a molybdenum deposit in Wilson Arm, 45 miles east of Ketchikan. It'll take 5 to 10 years and about $400 million to develop. The firm is now awaiting approval of its environmental impact statement.....(Well, at least they won't have wasted 9 years like I did.).....Cheers.

Metals Market

	Feb. 13, 1976	Two Months Ago	Year Ago
Antimony ore, stu equivalent European ore	$ 17.00-18.50	$ 17.00-18.50	$ 23-24
Barite (drilling mud grade per ton)	$ 17-28	$ 17-28	$ 17-21
Beryllium ore, stu	$ 40-42	$ 30.00	$ 30.00
Chrome ore per long ton (Transvaal)	$ 36-42	$ 37-52	$ 55.00
Copper per lb. (MW-prod.)	$ 0.63	$ 0.63	$ 0.63
Gold per oz.	$131.20	$139.60	$189.50
Lead per lb.	$ 0.19	$ 0.19	$ 0.24
Mercury per 76-lb. flask	$125-130	$117.00	$228.00
Molybdenum conc. per lb.	$ 2.62	$ 2.62	$ 2.43
Nickel per lb. (cathode)	$ 2.20	$ 2.20	$ 2.01
Platinum per oz.	$155.00	$148.00	$160.50
Silver, New York, per oz.	$ 4.10	$ 4.10	$ 4.49
Tin per lb.	$ 3.26	$ 3.02	$ 3.73
Titanium ore per ton (Ilmenite)	$ 55.00	$ 55.00	$ 55.00
Tungsten per unit (GSA domestic)	$ 81.93	$ 77.96	$ 88.12
Zinc per lb.	$ 0.37	$ 0.39	$ 0.39

State of Alaska
Department of Natural Resources
Division of Geological & Geophysical Surveys
P.O. Box 80007
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