STATE OF ALASKA

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State of Alaska
Department of Natural Resources
DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

Information Circular 6

ALASKAN PROSPECTING INFORMATION

Revised August 30, 1978

STATE OF ALASKA
Department of Natural Resources
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

According to Alaska Statute 41, the Alaska Division of Geological and Geophysical Surveys is charged with conducting 'geological and geophysical surveys to determine the potential of Alaska lands for production of metals, minerals, fuels, and geothermal resources; the locations and supplies of ground waters and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and shall conduct other surveys and investigations as will advance knowledge of the geology of Alaska.'

In addition, the Division shall collect, evaluate, and publish data on the underground, surface, and coastal waters of the state. It shall also file data from well-drilling logs.

DGGS performs numerous functions, all under the direction of the State Geologist---resource investigations (including mineral, petroleum, geothermal, and water), geologic-hazard and geochemical investigations, and information services.

Administrative functions are performed under the direction of the State Geologist, who maintains his office in Anchorage (3001 Porcupine Drive, 99501). Other DGGS offices are at:

- 794 University Ave.
  (P.O. Box 80007)
  College, 99708

- 3601 C St, Suite 1008
  (Pouch 7-005)
  Anchorage, 99510

- State Office Bldg.
  230 S. Franklin
  Juneau, 99801

- State Office Bldg.
  (P.O. Box 7438)
  Ketchikan, 99901

ALASKAN PROSPECTING INFORMATION

The State Division of Geological and Geophysical Surveys (DGGS) receives many requests for information on prospecting in Alaska. The purpose of this circular is to answer this type of request as briefly as possible. If, after studying this information, the reader has specific questions on particular items or localities, the DGGS will answer them to the best of its ability.

Prospecting is vital to the welfare and growth of the Alaskan mining industry. New discoveries must be made. Prospecting has an alluring aspect to the individual who enjoys outdoor life, but in Alaska it can quickly lose its glamour because of bad weather, insects, impenetrable terrain, and other difficulties peculiar to the North. A person who will not or cannot accept hardships and disappointments should not try prospecting in Alaska. However, there are instances where one good discovery has made its owner financially independent for life. The odds are long but the stakes are high.

A number of important discoveries have seemingly been the result of pure luck, but a knowledge of geology and mineralogy will most certainly increase one's chances of being successful. Good nontechnical books on the subject are available, and courses in prospecting are given by some universities, including the University of Alaska at Fairbanks. DGGS, the U.S. Geological Survey, the U.S. Bureau of Mines, and the University of Alaska are all agencies whose publications and services can be of considerable help.

Division of Geological and Geophysical Surveys

DGGS is located in College on the university campus, and in Anchorage (3001 Porcupine Drive). In addition, DGGS has mining-information specialists in Anchorage (3601 C St, Suite 1008 -- Pouch 7-005 zip 99510); Juneau (230 S. Franklin St, Rm 407; zip 99801; Ketchikan (State Office Bldg, Box 2438, zip 99901; and College, (794 University Avenue; zip 99708)

For a more definitive review of DGGS services, see Information Circular 12.

The DGGS Minerals Analysis and Research Laboratory is maintained at College to provide free analytical work on Alaskan samples for Alaskan prospectors. Services include fire assays for gold and silver, atomic absorption analyses, spectrographic analyses, analyses by X-ray fluorescence, and X-ray diffraction and mineralogic and petrographic examinations. Samples may be mailed or delivered directly to the laboratory. A sample-assay request form must accompany each sample. Other services include technical advice on prospecting, the maintenance of geologic and mining reference libraries, data on numerous mining claims, and a reference collection of topographic maps.

DGGS staff geologists are usually available to answer queries regarding minerals, mineralized areas, and potential prospects. If your specific problem is not immediately answerable, the geologists can generally help you out by directing you to another source or a reference work.

The DGGS staff includes a mining engineer who is available for the examination of properties for prospectors who are unable to afford the services of a private engineer. This service includes advice on how to proceed with the prospect, its probable worth at the time examined, and if desired, a written report on the prospect.

DGGS maintains both a Kardex file and a microfiche file of all claim location certificates and assessment-work affidavits that have been recorded in Alaska since 1954. From this file, DGGS can inform prospectors whether specific areas are likely to be open or staked and who is holding claims on the ground.

The Division maintains a mineral inventory or bibliography of all mineral deposits in Alaska. Information in this file includes information on geology, mineralogy, references to reports, bulletins, past production, and status of ground on all known mineral occurrences in Alaska. Except for occasional items of confidential information, it is available to the public and is of benefit to prospectors as additional knowledge on areas in which they wish to work. Files of U.S. Geological Survey bulletins are also maintained for reference.

In addition to the above information, there are also many reports by DGGS and private engineers which are available for study at the College office. Additional technical publications, geologic and topographic maps, and other sources of information for prospectors may also be examined at Juneau, Anchorage, College, or Ketchikan. Prospecting handbooks are for sale at College.

U.S. Geological Survey

The U.S. Geological Survey has geologists stationed in Anchorage and Fairbanks for public inquiries. It also has an office in Fairbanks (Federal Building) where topographic maps may be purchased either by mail or over the counter. (Their Anchorage office handles maps over the counter only.) Alaskan USGS maps may also be purchased from the USGS Map Distribution Section at the Denver Federal Center, Denver, CO 80225. USGS bulletins that are in print may be purchased from the Government Printing Office (Branch of Distribution, USGS, 1200 So. Eads St., Arlington, VA 22202---an authorized agent of the Superintendent of Documents, GPO). Out-of-print bulletins can be purchased from various second-hand book dealers, the addresses of which may be obtained from many libraries. USGS bulletins give valuable information on the geology and prospects of certain areas and are a distinct aid to prospectors. They usually contain geologic maps otherwise not obtainable, since only the topographic

maps are sold separately. The USGS bulletins can usually be found in the libraries of larger cities of the U.S.

The USGS topographic maps are a series of 153 separate quadrangles at a scale of 1 inch equals 4 miles. These completely cover the state and sell for $2 each at government offices or slightly more at retail stores. Large portions of Alaska have also been mapped at a scale of 1 inch equals 1 mile, which gives a better detail and is generally more useful. These are $2.00 each if ordered from the Government. Free indexes of these maps, together with information on how they should be ordered, can be obtained from the above distribution offices of the USGS. For sale by the USGS is a series of mineral resource (MR) maps that give information on the mapped mineral deposits.

U.S. Bureau of Mines

The U.S. Bureau of Mines maintains an assay laboratory at Douglas (near Juneau), but its services are not generally available to the public. The bureau selects certain properties, and with drills and other sampling equipment, investigates their economic possibilities. Reports on these investigations are available to the public (Box 550, Juneau, Alaska 99801); many are also on file in the DGGS offices.

University of Alaska

The University of Alaska, in addition to its fully accredited curricula in mining engineering and geology, offers mining short courses on the campus and at most centers of population each winter. These courses, which are designed for prospectors and would-be prospectors, require no prerequisites and cost little. Subjects covered include basic geology, mineralogy, mining and prospecting methods, and simple methods of

mineral identification. For the advanced prospectors, there are courses in geochemical prospecting. Further information on any of these courses can be obtained from the Conferences and Short Courses Office (University of Alaska, Fairbanks, AK, 99701).

The Mineral Industry Research Laboratory, located in the O'Neill Building on the UA Fairbanks campus, has a wealth of manuals and handbooks available to the prospector. A list of such documents will be given on request (MIRL, UA, Fairbanks, AK 99701).

Supplies

Prospecting equipment and supplies can range from bulky to light, depending on the type of prospecting trip proposed, the ability of the individual to 'rough it,' and the part of Alaska to be prospected. Modern lightweight tents, sleeping bags, and dried foods or rations keep the weight of camping gear to a minimum. The prospector should also remember that it is likely to be cold out in the 'bush' and often quite uncomforable. Rubber footwear and rain gear are necessary almost everywhere in Alaska. Insect protection, such as plenty of repellent or a head net, is necessary. Ordinary outdoor work clothes plus woolen underwear and a long rainproof jacket or parka are advisable. The prospector should definitely not count on living on game while in the bush, although some fish lines with a few flies and a red spoon for grayling and pike will allow an occasional variation in diet.

It is not recommended to prospect alone; in some sections firearms are recommended for protection from bears. Necessary tools and equipment are the prospector's pick, compass, hand lens, notebook and pencils, maps, and sample sacks. Additional equipment that can be added---depending on the prospector's aims, finances, and backpacking ability---includes measuring tape, sampling moil and hammer, gold pan, mortar and pestle,

small shovel, altimeter, Geiger counter, dip needle, mineral light, mineral identification kit, geochemical kit, and carbide lamp. If a prospector is considering bringing extensive or heavy outfits or vehicles to the state, it is strongly urged that before going to the expense of purchasing and shipping equipment, he first come to Alaska and personally investigate field conditions where he intends to operate and the regulations regarding land status and vehicle restrictions.

Transportation

Alaskan prospectors travel principally by air. Commercial air fares are currently about $300 from Seattle to Juneau, $400 to Anchorage, and $600 to Fairbanks. Small float planes are used almost exclusively in Southeastern Alaska, and both float and wheel planes in other parts of the state. Lakes, rivers, and small flight strips (where permission to use should be obtained) are numerous in Interior Alaska. Charter rates for small planes start at about $75 per hour. Rates on scheduled flights between towns or settlements are less. Helicopters are usually available at the larger towns at rates near $300 per hour. Much of Alaska is without roads; the principal places that are connected by the road network are Haines, Seward, Homer, Anchorage, Valdez, Mt. McKinley National Park, Fairbanks, Circle, Eagle, and Manley Hot Springs. Automobiles cannot travel off the roads; even all-terrain vehicles cannot travel over much of the country in the summer. The use of horses in Alaska is increasing. Boats of the proper size and type for the region involved are useful. Ferries and passenger boats sail to Alaska from Seattle and Canadian ports, and ferries travel frequently between Southeastern Alaska towns.

Minerals

Coal lands are subject to permit and lease from the Federal Government or State of Alaska on a royalty and rental basis. Leases may be obtained on oil and gas lands. Provision is also made for the U.S. Bureau of Land Management to issue free-use license for 10-acre

tracts from which coal may be mined for the use of the licensee without payment of royalty.

When Alaska acquired statehood it gained title to all tide and submerged lands along its boundary out to the 3-mile limit. Some of these lands are potentially valuable for concentrations of gold, platinum, tin, and other metals. The offshore areas are subject to prospecting permit and lease through the Division of Minerals & Energy Mgt., Anchorage Pouch 7-034, 99510

Copper, iron, molybdenum, nickel, and mercury are the minerals or metals that are currently the most in demand and probably have the greatest possibilities of financial reward for prospectors. A number of mining companies are actively seeking mines in Alaska, and promising prospects include tungsten, tin, asbestos, and mica.

The practice of grubstaking a prospector has returned to a limited extent, and a few of the mining companies have adopted the practice of hiring qualified men for prospecting in favorable areas.

It is often difficult for a person unfamiliar with Alaska to decide on a specific area or district in which to prospect. The choice depends on the individual---whether he is interested in lode or placer, his funds, his experience, and his preferences for an 'inhabited' district or one that is wild and unexplored. The best procedure would be to meet and obtain suggestions from as many mining men and prospectors as possible before finally deciding on a locality. Remember, the prospectors who searched Alaska in the early days knew their business and probably discovered most of the exposed or easily found deposits. On the other hand, most of these old timers were interested only in gold and they probably overlooked deposits of other minerals that might be equally important today. A number of areas not reached by these early-day prospectors are now accessible by modern methods of transportation. Some of the more complex or low-grade

ores that were of no interest then may now be of major importance. Also, some minerals in demand today were practically unknown or not wanted in the early days. Finally, the recession of glaciers, avalanches, landslides, floods, and other agents of erosion may have disclosed new outcrops.

New and modern methods of prospecting are available to prospectors who will take the time and effort for serious study. Geochemical prospecting is a very sensitive technique of testing soils, stream sediments, and water for trace amounts of metals, thus yielding clues to nearby ore bodies. The rudiments of this can be learned in 2 weeks in one of the earlier mentioned University of Alaska courses. Various types of geophysical prospecting are becoming more accessible to the average prospector each year. Aerial photos can be obtained from the USGS Map Information Office (Federal Center, Denver, CO 80225) for a considerable part of Alaska; with proper study of these and books and reports, much can be learned about the geology of the areas covered.

Equipment advertised as being an ore or mineral finder should be carefully investigated. The best of geophysical methods give only readings or indications that must be studied, interpreted, and carefully evaluated.

Land Status

Many large areas in Alaska have been withdrawn from mineral entry by federal agencies for various reasons. Preparations for a prospecting trip should include a check on the status of the intended area. Information on this can usually be obtained at the DGGS offices, the U.S. Bureau of Land Management (Ft. Wainwright, 99703; or 701 C St, Box 13, Anchorage, 99513) or State Div. of Land & Water Mgt, 3601 C St, Suite 1008, Anchorage, Pouch 7-005, 99510.

Prospecting is permitted in Mt. McKinley National Park, subject to park regulations. Glacier Bay National Monument is open to prospecting but not to oil leasing. In either of these areas, the Superintendent should be consulted prior to entry.

Land selected by Native Corporations are private property, and permission to enter them must be obtained from the proper regional office. A check on the existence of homesteads (which are also private property) in the intended prospecting area should be made with the BLM. The State Division of Lands should also be consulted on the general intended area of prospecting to see what conflicts might exist.

DGGS Information Circular 1, "Proper Claim Staking in Alaska," is available on request. Also, for those interested in learning the locations of recording districts and offices for recording claims, DGGS has a recording-district map. The files of recorded claim location certificates and assessment work affidavits are kept at the offices of the State Magistrates who act as recorders for their respective mining districts. These are public records and may be inspected by anyone. Other information circulars impart mining information to the prospectors; IC-11 is a list of all reports issued by DGGS. (All IC's are free.)