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FOREST FIRES IN ALASKA

by

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INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION
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C. E. H. and J. W. F.

CONTENTS

CONTENTS — Continued

CHAPTER 1
INTRODUCTION

PURPOSE OF THIS PUBLICATION

Alaska has long been thought of as an area to be exploited rather than developed. Only recently have the advantages of managing a continuous resource gained much support. Even as late as the end of World War II the official feeling towards the timber supply in Interior Alaska was pretty clearly indicated in the following quotation from a United States Department of Interior report, (USDI 1945): "It seems reasonable to suppose that little of the interior timber will ever come into the general timber-products markets though birch trees of the best quality are suitable for cabinet making . . . ."

The term, "Interior Alaska," describes that portion of the State which lies west of the 141st meridian except for the rugged south coast east of the Kenai Range on the Kenai peninsula. Most land south and east of this line is managed by the U.S. Department of Agriculture's Forest Service in the form of three National Forests. All the rest of the State, some 360,000 square miles, is protected by the U.S. Department of Interior's Bureau of Land Management; 225 million acres require active fire protection. The 1950-1958 average annual loss from fire is 1.1 million acres; however, this varies from 37,000 to more than 5 million acres in individual years. Some administrators hope that knowledge gained through research and development will increase our effectiveness in combating fire and lead to a reduction of the annual loss to one-tenth of this tremendous amount.

This publication was written to serve two audiences: The first consists of those who are interested in the fire protection problems but who do not already have knowledge of the overall geography, climate, economic values, and the fire control "picture"; the second audience is made up of practicing foresters who wish to gain specific information based on fire weather, behavior, statistics, and control data for fire research, fire control planning, and fire suppression purposes. Interior Alaska has a great many resources that deserve a much higher level of protection than they have been receiving. In order to protect a land adequately, much knowledge must be had about the enemy—in this case, fire.The geography and climate of the area are described here in terms of their significance to fire control. Analysis of climate, fire behavior, and fire statistics over the past several years should help establish normals against which future fire seasons and fire control actions can be measured; also, it may help shape the type and size of fire detection and control organization deemed necessary to protect the resources to an extent commensurate with their values. For those who wish to delve into statistics, the appendix contains the basic information from which most of the charts and tables in this report were derived.

The authors wish to point out that it is not their intent to draw major conclusions from the information presented nor to set forth a comprehensive research program, but to put under one cover the major facets of wild fires in Interior Alaska. Researchers can utilize the information in this publication for formulating research programs; resource managers should find this material beneficial in fulfilling their fire control planning and suppression responsibilities.

The bulk of the statistical information is for the period 1950 through 1958; however, a few references as late as 1961 do occur. Some items of information were gleaned from conversations and general listening and reading; such information cannot easily be referenced nor substantiated, and can even be erroneous. The authors have attempted to minimize these sources and they do apologize if misleading information still remains in the text.

LITERATURE REVIEW

Literature pertinent to forest fire control in Interior Alaska is scarce. Most of the available references that bear on some facet of fire research and control are specifically referred to in appropriate chapters. However, some publications that may have only general application to the problems at hand are mentioned here.

Aboriginal and white man share jointly the responsibility for the tremendous burned areas in Interior Alaska. Aboriginal man had no easy way of starting a fire; so when he once had one burning, he was loath to put it out. Extinguishing a fire also was quite a chore as tools were very primitive and much hard work was required. Early man had many uses for fire, the more prevalent being communication by smoke signals, hunting by driving game into pockets or into the water by setting fires, fighting hostile tribes by advancing firelines, and combating insect pests; in fact, it has been said that mosquitoes are the cause of more forest fires than any other one thing. Clearing the forest for easier travel and obtaining dry fuel wood were other common reasons for setting fires (Lutz 1959).

The white man set fires for many of the same reasons as the aboriginals, but he also had reasons of his own: to accelerate growth of grass for livestock, to clear crop land, to see rock surfaces better when prospecting, to remove vegetative cover for strip mining, to clear road and railroad rights-of-way, and just to see fire burn. Carelessness and indifference by both aboriginal and white man have resulted in keeping timberland from progressing to climax status.

The militarily strategic location of Alaska, and the Nation's reliance upon air defense have prompted a large number of meteorological research projects during the past decade or more. Information gathered for forecasters particularly interests fire research personnel because of the wealth of data on air circulation, winds, pressure distribution, and storm patterns, as described by Arctic Weather Central, 11th Weather Squadron (1950); U.S. Weather Bureau, Climate and Crop Weather Division (1943); and Elmendorf Forecast Center Headquarters (1953). Use of the cold polar lows, as studied by Reed and Tank (1956) is important to fire-weather forecasting, particularly in predicting the effect of upper lows as summer storms move along the fringe of the Arctic land mass. Reed's work (1958, 1959) points up the importance of atmospheric influence on the whole fire season and on individual fires.

This Nation has a large inventory of wood for lumber and fiber products. By 1975 the demand will come close to the available supply; by 2000 the demand will far exceed the supply unless better forestry practices are employed or vast new sources of timber are found. Three-fourths of the commercial forest land in the United States is privately owned, and 86 percent of the ownership is in tracts of 100 acres or less. The anticipated rate of gross national product increase, and likewise timber demands, is greater than the population increase because the standard of living is expected to increase. At present there is no excess of commercial forest lands; less will be available in the future upon which to grow a greater amount of timber (U.S. Forest Service 1958).

Protection of the Alaskan forests from fire is an essential feature of all future planning. Protection and management of our extensive present and potential timber resource of Interior Alaska may provide that extra wood and fiber necessary to get us "over the hump."

Interior Alaskan forest resources are now being carefully surveyed by photographic techniques. The major problem is determining the potential timber type on formerly forested land and also differentiating between land that is capable of producing industrial wood and land that is not. Lutz and Caporaso (1958) consider forest land classification indicators from two primary standpoints — vegetation and topographic situations. The completed survey and map project may serve as a basis for broad-scale fuel type classification.

When speaking of wildlife population and distribution and forest cover, Alaska has been referred to as a continuum of edge. "The forest wildlife of Alaska is truly more a product of the edge, transition types, forest line, and timber line than of specific forest types . . . the ranges of various species of wildlife are neither distinct nor constant for forest type" (Nelson 1960, p. 461). The 2-million-acre Kenai National Moose Range, managed by the Bureau of Sport Fisheries and Wildlife, becomes one of silvicultural manipulations to retard the succession from birch-aspen to climax spruce stands, and to convert mature forests of both types by mechanical, chemical, and controlled burning methods into young hardwood growth essential for maximum production of browse, The story of reindeer differs from that of the multitude of other game species in that the reindeer is an introduced species (as are bison at Big Delta and elk on Afognak Island). Some 1,300 head were transplanted from Siberia during the period 1890-1902. The number increased to 1 million by 1936, but dwindled to 26,000 by 1950. Ten years later the herd had made a modest increase to about 38,000. During this long period overgrazing and fire caused serious deterioration of reindeer feeding sites; recovery of this lichen range, under close protection, may require 20 to 40 years (Heintzleman 1936; Zumwalt 1960; Palmer and Rouse 1945).

Objectives of fire research and fire control management in much of Canada are similar to those for Interior Alaska. Canada is divided into 13 protective zones, within which acceptable average annual burning rates have been calculated for experimental, recreational, productive and nonproductive forest areas, and for non-forested areas. Twenty-eight productive forest types are recognized. The burned area objectives take into account values requiring protection and factors that affect the difficulty of protection (Beall 1949).

Fire research personnel in Canada are studying many phases of fire behavior and control. Proposed expansion of programs along the following lines will complement anticipated research in Interior Alaska: study of fuel burning potentials, fuel type classification, drought index tables, improved detection methods, air and ground application of improved retardants, and an integral economic study of fire suppression efforts in Canada (Besley 1959).

One might assume that in older established countries like Sweden, where the economy of the Nation has leaned heavily on its timber supply, the fire control organization would be highly developed and efficient; but this is not necessarily true. Methods and even concepts of fire control must change with times. The Swedes have found that it is difficult to compare data spread over a several-year period when knowledge and accuracy are much better at the end than at the beginning of the period (Stromdahl 1956 and 1959). Much the same is true for the data analyzed and presented in this publication.

SUMMARY

Interior Alaska's forest resources have great potential value — a fact that received little recognition until after World War II. One million acres out of the 225 million acres protected burn over annually. Too little is known about the special fire problem in high latitude northern forests. Analysis of climate, fire behavior, and fire statistics over the past several years should help establish normals against which future fire seasons and fire control actions can be measured; also, it may help shape the type and size of fire detection and control organization deemed necessary to protect the resources to an extent commensurate with their values.

Lutz and Uggla are recognized leaders in research pertaining to the fire ecology of high latitude forested areas, and have contributed substantially to a better understanding of the forest fire situation in Interior Alaska. The importance of Alaska to national defense prompted the military services to sponsor extensive meteorological and climatological research. Some of their work involved studies of weather circulation patterns that affect not only Interior Alaska but the entire continent. The resumé of literature in this publication by no means accounts for the total amount of material written on matters that affect forest fire research and control in Interior Alaska, but it does indicate the type of work that has been done.

The predicted increase in U.S. population will impose a terrific strain on the supply of wood products by the year 2000 according to recent studies. The large volumes of wood fiber material available in Interior Alaska will be needed to help meet the demands by that time. Forty million acres of commercial forest land contain 180 billion board feet of wood and yield, at present, an estimated net growth of 4 billion board feet. Much of this commercial forest land is capable of producing more than 10,000 board feet of timber per acre.

Commercial use of fish and wildlife is a $100 million industry; it can ill afford fire-caused stream siltation with its resultant reduction of oxygen and plant life. Expenditures by sportsmen and recreationists now exceed $20 million per year; tourists like to see forests of green

trees, not snags or retrogressed sites. The services industry likewise benefits from contented tourists. The well-being of the wildlife resource depends upon healthy forest environment under adequate protection. A period of 40 to 100 years is often required for caribou and reindeer range to recover from fire. Fur quality is much reduced in burned-over country. Many of the Nation's duck and geese originate in Alaska; destruction of their eggs and nesting grounds reduces the hunting potential in the western half of the United States.

Mining operations, still important in Alaska, must have a constant flow of water, with neither flooding nor drought, for their ventures to be economically successful. Interested potential investors tend to shy away from establishing business or industry where a continuous source of raw material cannot be reasonably assured and protected. Well-cared-for watersheds are necessary for all resource development and maintenance. Aircraft use for defense, profit, or pleasure requires smoke-free skies. Airborne fire control operations in particular cannot succeed when the sky is full of smoke.

No reliable means of determining intangible loss from fire has yet been developed. Even the full impact of fire on tangible assets of timber, forage, and improvements is sometimes difficult to ascertain. Research and development must be aimed at establishing and maintaining standards of fire control commensurate with the needs for industrial, recreational, and personal security.

Alaska's 586,000 square miles make it by far the largest State in the Union. Geographically, the peninsula of Alaska varies from a southern coastline of precipitous ice-packed mountains, to vast flood plains along the Bering Sea, to extensive interior valleys separated by rolling hills. The State can be divided by geographic formations into seven distinct divisions. Southeastern Alaska lies along the coast southeast of longitude 141° W. to the end of American ownership south of Ketchikan. The Alaska Range separates Cook Inlet, Copper River, and South Coast Divisions from the others and confines them to the maritime climatic influence. West Central and Bristol Bay Divisions are made up of hills and broad flood plains and open out onto the Bering Sea. The Brooks Range separates the Arctic Drainage Division from the rest of the State. The broad valleys of the landlocked Interior Basin embrace most of the Yukon, the upper Kuskokwim, and the Tanana River drainages.

The movement of high and low pressure systems over the northern Pacific and the Alaskan mainland areas influences the climatic conditions experienced in the several climatic regions of Alaska. Summertime heating of the land surface of the interior under the influence of long days causes a relatively low pressure while pressure builds up over the cool waters of the North Pacific. As a result, weather becomes warm, sometimes hot, with occasional rains. Climatically, the State is divided into four general zones: the Maritime Zone consists of the coastline from southeastern Alaska through the Aleutian peninsula; the arc farther inland, but extending along the Bering Sea, constitutes the Transition Zone; the great Interior Basin is called the Continental Zone because of its definite continental climatic characteristics; and the Arctic Drainage Zone is one of dominant Arctic influences.

Climate of the Maritime Zone is characterized by small variations in summer temperature, high humidities, high fog frequency, considerable cloudiness, and abundant precipitation. The Transition Zone receives considerably less precipitation than the Maritime Zone. Thunderstorms are common in the Copper River portion. Winds in this zone are generally light, but locally strong and erratic. The Continental Zone is set apart from the others by topographic barriers. Summertime temperatures may reach into the high 90's; annual precipitation in some localities is as little as 6 inches. The Arctic Zone is not important to fire control activity. Precipitation and temperature are both low. Average windspeeds, however, are relatively high. The sun's rays in this extremely high latitude cause little surface heating.

Data from 18 weather stations throughout Interior Alaska were analyzed for the period 1950-58 to determine the weather regimes under which fires burn and control action is taken. Precipitation generally decreases from the south to the north and increases from April through August. Average afternoon temperatures increase and relative humidities decrease from the Anchorage area northward towards the Fairbanks-Fort Yukon area, causing fuels to become progressively drier. Humidities are lower in May and June than in July and August. The length of day increases with latitude; Fort Yukon has nearly a month of continuous daylight. As expected, winds in the afternoon are stronger than those in the morning; winds in May are stronger than those in July. Proximity to glaciers lying in long, deep canyons tends to increase the force and irregularity of windspeed and direction. Cloud ceilings are generally above 1,000 feet during May to early July, but become lower more frequently during the rest of the summer. Smoke and haze become increasingly detrimental to firefighting activities after the end of June. Permafrost is more than 1,000 feet thick in the extreme north of the State but is nonexistent in the southern portion; the thick layer of mosses and lichens insulates the soil and retards its thawing; roots remain cold late into the spring and tend to delay the start of vegetative growth; the resultant late dormancy may cause fuels to remain dry much later into the early summer than one might normally expect.

Since Alaska has no fuel type classification system, fire behavior is described according to its relative violence in various general cover types. As in continental United States, fire becomes more active when it travels through finely divided fuels. Mosses, lichens, and spruce branches extending to the ground provide a nearly unlimited path of fine fuels through which fires may advance. Each of several major cover types presents various fire behavior possibilities. Birch, aspen, and cottonwood stands do not normally carry fire rapidly. Increase in the spread rate of fire is closely associated with increased ratio of spruce to hardwoods. Rate of spread is most rapid in black spruce because of the combined horizontal and vertical continuity of fuel in this cover type. Light burns do not often cause severe type retrogression, but severe single burns or repeated mild burns do. An empirical table groups expected rates of fire spread in major cover types into fire classes.

Fire-danger rating was not used in Interior Alaska prior to 1956, nor were there any data available from which to develop a suitable system. The need for a guide to help fire control officers do a more competent fire management job led to establishment of the Intermountain System in Interior Alaska. Use of this system has accomplished two objectives: (1) to serve as a fire management guide, and (2) to obtain research data to be used in improving fire-danger rating techniques and in making local modifications to a national uniform system. Fire-weather factors are not as severe as those in continental United States, but rates of spread in Interior Alaska may approach those known to occur in many of the more southerly States. The diurnal fluctuation of fire-danger rating factors is less in Interior Alaska than in northern Idaho; this indicates that perhaps extended periods of moderately severe weather produce the same conditions in terms of fire behavior as a short number of hours of very severe weather. Establishing fire-weather stations and using information from them was a long step forward, but the 14 stations in operation by 1960 were still grossly inadequate for intensive fire control management purposes. Measurements from these stations indicate that burning indexes are highest in May and June; in Montana and Idaho they are highest in July and August. These burning indexes, along with climatological information, show why the greatest fire load is in May and June.

Forest fires have burned in Interior Alaska from time immemorial. Until recent years, nearly all fires in the State were thought to have been man caused. Analysis of all fires reported during the 9-year period 1950-58 revealed much valuable information. Individual fire reports show that *lightning causes about one-fourth of all fires and that these lightning fires account for three-fourths of the acreage burned.* Sixty-two percent of all public domain land protected by the Bureau of Land Management is in Alaska, or 27 percent of all land under organized protection in the entire United States. Reports show that on the average 253 fires burn 1.1 million acres annually, with an average area per fire of 4,400 acres. This is compared to 99,848 fires burning 3 million acres, or 30 acres burned per fire, on all other land under protection in the rest of the United States. The number of reported fires per million acres protected is 1.1 in Interior Alaska compared to 168 in the rest of the United States.

Records indicate that if a fire in Interior Alaska is not controlled while its area is less than 300 acres, it may and often does spread to several thousand or even to several hundred thousand acres. Seventy-four percent of all fires in Interior Alaska burn in the highly flammable spruce and tundra types. The final size of a lightning fire averages 10 times the size of a man-caused fire primarily because lightning fires are common in the Interior Basin, but detection and access are both difficult. During the period of analysis *33 percent of lightning fires and 9 percent of man-caused fires never receive any control action.* These figures include many fires extinguished by nature before action could be taken; also, action is not taken on fires on private or entry land unless real danger to adjacent public lands develops. Fires on which no action was taken account for 35 percent of acreage burned by lightning fires and 68 percent of acreage burned by man-caused fires. Eighty percent of all lightning fires occur in June and July; but 73 percent of the acreage burned by these lightning fires is burned in June. Fifty-seven percent of man-caused fires occur in May and June; but 70 percent of all acreage burned by these man-caused fires is burned in May. In general, as the total number of fires increases, the number of Class E fires (more than 300 acres) also increases, and the number of Class A fires (less than one-fourth acre) decreases; early overloading of a small suppression force may account in part for this.

Most man-caused fires occur near population centers, as would be expected. More than a usual number of reported lightning fires also burns in a somewhat similar pattern; the distribution will no doubt appear different when better detection and reporting procedures are developed.

Southeastern Alaska has not been treated in this analysis because fire conditions there are not as critical as in the Interior. An average of 26 fires — virtually all man-caused — occurs annually in southeastern Alaska and burns about 638 acres, or 25 acres per fire, compared to 4,400 acres per fire in Interior Alaska. However, the fire potential in southeastern Alaska is increasing as logging activity increases.

Virtually no specific data were available describing the behavior of wildfires in Alaska prior to 1958. During 1958 and 1959, fire behavior teams collected data on the fireline from 19 fires. The teams measured rates of spread, weather factors, and fuel variations, and observed their interrelationships. The primary question to be solved was, "Why do fires in Interior Alaska get so large so fast?" The most probable explanation of the behavior of seven of these fires is briefly summarized below:

1. Healy: High winds resulting from topographic features.

2. Murphy Dome: Broken topography, high burning index, thunderstorms, and atmospheric instability.

3. Kenai Lake: Steep topography causing diurnal wind reversals; frontal movement passing over area.

4. Colorado Creek: Highest burning indexes of all fires studied; topography altered winds.

5. Lake 606: Strong winds, thunderstorm downdrafts.

6. Stony River: Unbroken horizontal fuel continuity; frontal movement.

7. Huggins Island W-10: Rough topography; variable and gusty surface winds due to atmospheric instability.

Data from these fires indicate that nearly all extreme behavior can be explained qualitatively but not quantitatively at present. Important problems in fire control are: (1) forecasting fire-weather conditions, (2) predetermining fire behavior, and (3) determining the influence of different fuels on rate of spread under various weather regimes.

Organized forest fire control in Interior Alaska began in 1939 with an appropriation of $37,500. The high potential value of the timber resource is now receiving more nearly adequate recognition; but even so, a comparison of the fire control organization in Interior Alaska with that of Region 1 of the U.S. Forest Service (Montana, northern Idaho, northeastern Washington, and northwestern South Dakota) reveals there is still a long way to go before an adequate fire control organization is achieved. The Bureau of Land Management in Interior Alaska protects seven times as much area, has one-fourth as many fires, and fights them with 11 percent as many regular fire personnel as Region 1. Alaska has only 8 percent as many people per square mile to draw upon for fighting fires in its vast, inaccessible territory. The annual burned area is 250 times as large as that in Region 1, or 36 times as great per million acres protected.

Major operational bases and warehouse facilities located at Anchorage and Fairbanks are augmented by several district centers and guard stations. Since the source of supply of many basic firefighting needs is many thousands of miles away from these two cities and economical delivery of them is very slow, successful dispatching of men and equipment is dependent upon close planning many months in advance. A highly reliable communication system is mandatory for operating such a widely spread fire control system. Radio equipment is being updated and the system expanded. Firefighting crews are hard to find, but crews of native Indians and Eskimos from small villages have proved to be excellent firefighters. Some tools and equipment commonly used elsewhere in the United States can be used effectively in Interior Alaska, but specially developed tools are needed to obtain maximum performance from the few available firefighters. Use of heavy fireline equipment is limited to dry slopes near roads.

Aircraft, both government and private, are being used increasingly for detection, transportation of personnel, smokejumping, supply, reconnaissance, application of retardants, and general administration. Use of helicopters is closely coordinated with other air and ground attack procedures. Foot travel is impossible over much of Interior Alaska because of bogs, meandering rivers, lakes, uneven terrain, and long distances.

Early detection of fires is a major problem since no fixed lookouts exist in Interior Alaska, and aerial patrol consists of one World War II pursuit-type airplane and intermittent use of other smaller craft during critical periods. Reports from commercial and military aircraft help, but since large areas are seen only occasionally, many fires cover hundreds of acres before being discovered and other fires are never seen until they have become extinguished from natural circumstances. Procedures must be developed for detecting, tracking, and reporting thunderstorms since they are responsible for three-fourths of the total area burned annually.

Attack time is being shortened by dropping retardants from planes and immediately following them by smokejumpers. Helicopters and ground forces are quickly moved in so that jumpers can return to base to become available for new fires. Forty-four percent of all reported fires start farther than 100 miles from headquarters. Speeding up of detection will pay off well by reducing the size of fires and the cost of suppression. Size class of fires increases as the length of time between discovery and control increases. Small fires are controlled within 2 hours from attack; but nearly half of all fires that cover more than 300 acres require more than 3 days to control. In the spruce type, 70 percent of small fires are only smoldering when attacked, whereas 47 percent of large fires are crowning at time of attack. The increasing violence of fires as their size increases again illustrates the need for early discovery and attack.

Total cost of fire protection in 1958 was 1.01 cents per acre as compared to 0.80 cent per acre on land in other States protected by the Bureau of Land Management; but Interior Alaska's burned area on 225 million protected acres averaged nearly seven times that for other States on 138 million protected acres for the period of 1950-58. The long-term goal of annual allowable burn is a maximum of 100,000 acres.

Several methods for using fire in disposing of land-clearing debris have been studied and some guides developed, but none have been found completely suitable for universal adoption. As yet untapped are means for fully using fire as an effective tool in attaining forest management objectives. Research in economics, forestry, and fire control operations is critically needed to help strike a balance between the strength of detection, presuppression, and suppression, and the most favorable overall cost of protection. In fire control planning and suppression, the primary factors that influence fire size and difficulty of control — weather, fuels, and topography — must at all times be kept in the forefront; no fire protection plan can be complete without incorporating the probable effect of these major influences.

CHAPTER 2

VALUES AT STAKE

TIMBER RESOURCES

Volumes have been published during the past few years describing the population explosion in the United States and showing how it will increase demands for all types of manufactured products. The demand for and the available supply of wood products during the next 40 or more years will have to be reckoned with *now* if a balance is to be obtained.

The recent Timber Resource Review emphasizes the fact that national demands *can* be met only if better and more ingenious forestry practices are instituted and utilization is made of large volumes of wood not presently usable or available.

Statements in the Timber Resource Review repeatedly note that the trend during the first half of the 20th century has been from a predominantly lumber consumption economy toward a pulpwood consumption economy. During the last half century, total consumption of lumber (boards, dimension stock, etc.) has not changed, but the population increase has about halved the per capita use. On the other hand, total pulpwood consumption has increased about twelvefold, causing a per capita consumption increase of about sixfold.

One way to help insure adequate timber supplies for the United States through the next 50 years is to increase utilization of a vast tract of forest land hitherto virtually untapped; namely, Interior Alaska. Timber resources of Interior Alaska were not included either in the statistical summaries or in analytical discussions in the Timber Resource Review because accurate information was almost nonexistent. Out of approximately 300 million acres of Interior Alaska land administered by the Bureau of Land Management, 120 million acres is forested; one-third of this forested land, or 40 million acres, is considered to be of commercial quality. Of this, 4 million acres or 10 percent is presently considered accessible from towns, roads, or railroads.

Many persons believe that Interior forests are slow-growing, stunted Arctic stands that have little or no value. Taylor (1956) has shown that this is not so. The estimated annual net growth of 20 cubic feet per acre can be increased considerably under good management. Well-protected managed stands should produce 3,900 cubic feet, or 15,500 board feet, of timber per acre at a rotation age of 160 years; this indicates a good margin of operability, since stands of 3,000 cubic feet in Maine and 1,500 cubic feet in Finland are now supporting pulp industries.[1] Canada has built a major pulp industry upon the same species of white spruce that grows in Interior Alaska. The timber economy of northern European countries is based upon small diameter spruce and hardwood forests growing under much the same conditions as exist in Interior Alaska. Perhaps when many of the present economic problems of labor, power, accessibility, and distance to market can be solved, a thriving pulp industry can be built upon this vast store of timber.

Interior Alaska holds many attractions for an increased wood fiber industry. Timberlands in large blocks no longer exist in mainland United States. The timber in Alaska's interior probably will have little value on the export *lumber* market because of high costs and low lumber grades, but Alaska's *pulp* can sell profitably on the world markets. Southeastern Alaska has already benefited by the establishment of two pulpmills since 1954.

Any proposal to increase productivity must be accompanied by a plan to increase protection of the investment. History and personal observations indicate that 80 percent of the forest land in Interior Alaska has been burned over sometime during the past 70 years. No large business concern can afford to invest 25 to 50 million dollars in a pulpmill without reasonable assurance that the raw material will be protected and kept available during the long number of years the mill must operate. Today, fire is a major danger to pulp stands, and one fire can wipe out many years' backlog of raw material required for operating a multimillion-dollar mill.[2]

[1] More recent plot data indicate 140 years is a better suited rotation age, and an optimum volume per acre would be somewhere between 10,000 and 15,000 board feet.

[2] The cost of one mill proposed for Alaska will be five times the price the United States paid for Alaska in 1867.

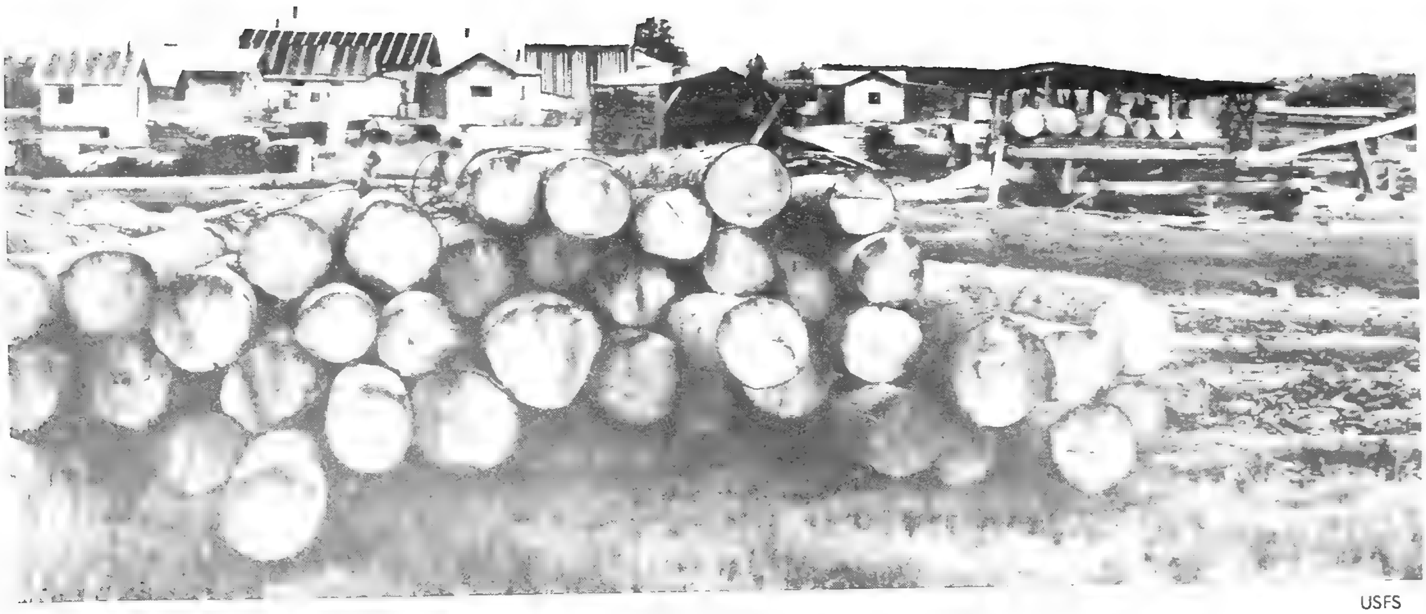
USFS

Figure 1. — Typical small sawmill, Circle.


USFS

Figure 2. — Extensive stand of Alaskan timber.

FISH AND WILDLIFE RESOURCES[3]

The full value of the wildlife resource to the residents of Alaska is greater than is immediately apparent. Wildlife plays an important part in the economy of Alaska as judged by the criteria of money, recreational use, time, employment, and social welfare. The value of fish shipped from Alaska since its acquisition has repaid its original purchase price of $7,200,000 more than 300-fold; the value of furs, 30 times over. During 1957, some 59,510 persons spent $17,018,500 to purchase hunting and fishing licenses; they spent 981,800 man-days enjoying their sport. In 1958, tourists spent $18,165,000 in Alaska. If one-fourth of that amount was attracted by wildlife, $4.5 million was expended for the enjoyment of the wildlife.

The four basic industries, numbers of persons employed, and the raw value of products in dollars for fiscal year 1957 were:

Industry	Persons employed	Raw value
Fish and Wildlife	60,000	$ 90,115,739
Agriculture	750	4,231,134
Forestry	500	6,914,000
Mining	1,991	23,408,000
		$124,668,873

FISHING RESOURCE

Of the 60,000 persons employed in some business related to fish and wildlife, nearly 24,000, or 40 percent, were engaged in commercial fishing. Salmon is the primary commercial species. The entire packing industry depends upon a successful spawn and healthy, thriving young fish that return to the sea to complete their life cycle.

Fire-damaged watersheds deteriorate through the action of the natural elements. Soil becomes unstable, and overland flow following heavy precipitation washes it into streams; the combined effect of oxygen reduction and destruction of streambed algae and other necessary minute food sources by scouring can render fish habitat untenable.

Any destroyed streambed ruins not only the current year's salmon spawn, but also eliminates proper grounds for spawning during the next several years. Rebuilding a depleted salmon population takes many years, even after a stream is again conditioned for proper spawning. Any decline in fish population reduces the catch for the cannery and the income to both the industry and the State.

USFS

Figure 3. — Salmon thrive best in waters from stable watersheds.

WILDLIFE RESOURCE

The annual recreational value of Alaska's wildlife runs into substantial figures. Expenditures by residents of Alaska amount to 59 percent of the $21 million spent, including an estimate of $4.5 million worth of esthetic value.

Some of the most important nesting grounds for wild ducks and geese are in Interior Alaska, especially along the lower Yukon River. Since these nesting grounds support vast numbers of migratory fowl that use the Pacific and mountain

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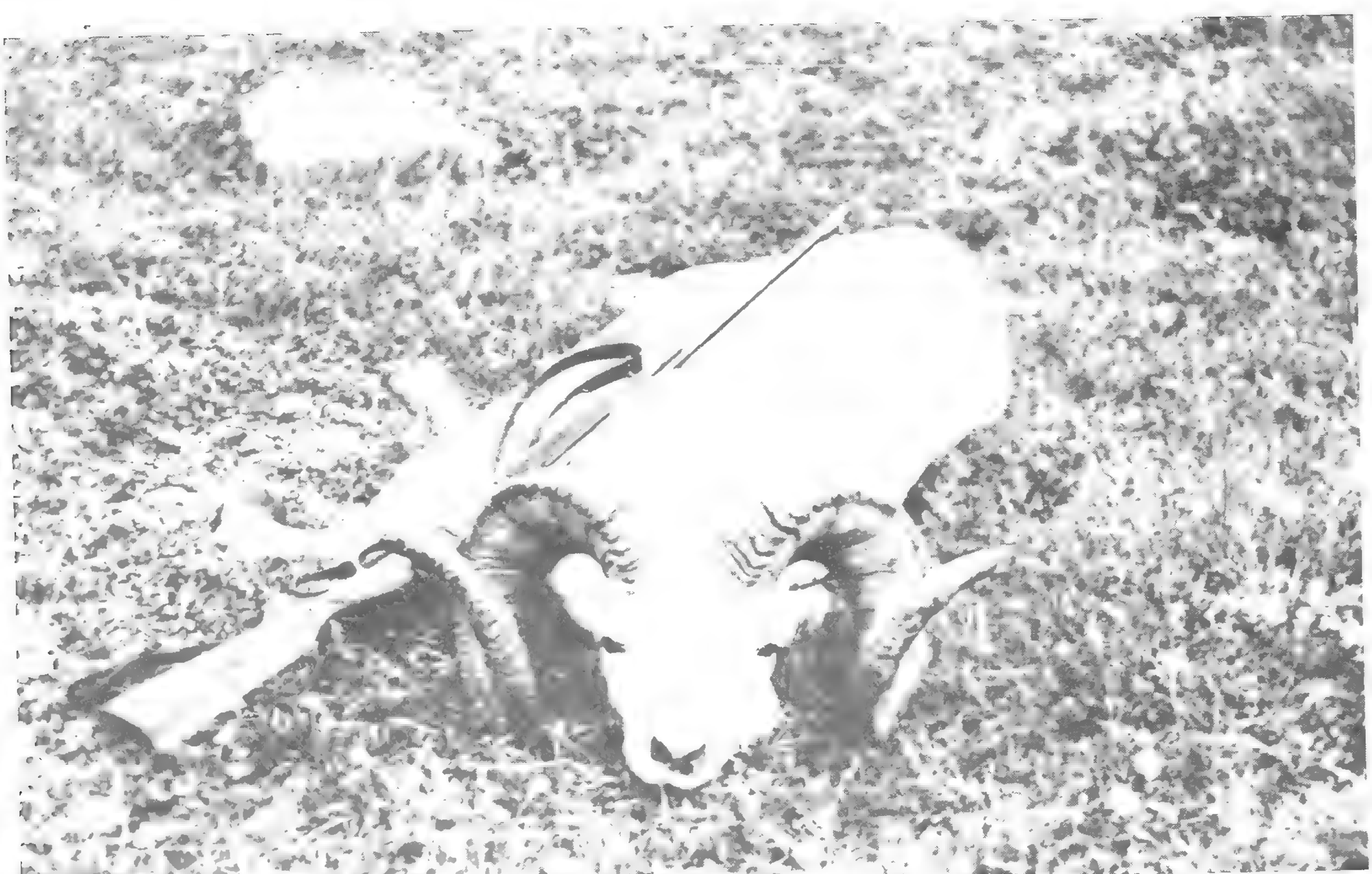
[3]Most of the statistical information for this section was obtained from the U.S. Fish and Wildlife Service (Buckley 1957).

BLM

Figure 4. — Sport fishing is a major attraction.



USFS

Figure 5. — Big-game hunting nets meat, sport, and revenue.

flyways, bird hunters throughout central and western United States depend upon their well-being. Fires destroy the protective covering; they burn nests and eggs and often kill fledglings and even adults. Although specific data are not available, fires along the lower Yukon River in the disastrous season of 1957 must have caused tremendous losses of eggs, fledglings, moulting ducks, and even mature birds.

Forest fires damage wildlife habitat, but repeated burns destroy it completely. At least 10 years is required for vegetation and cover to reappear in quantities and form sufficient to accommodate furbearing animals. From 40 to more than 100 years may be required for a caribou and reindeer lichen range to regain its optimum carrying capacity. Uggla (1958a) drew similar conclusions after intensive ecological studies in Sweden. Three hundred years may elapse before the more palatable and valuable, but least common, species recover to a point where they can be safely grazed.

Some animal species, for instance the marten, leave the country permanently after their habitat has been destroyed by fire. Furbearers appear to produce poorer quality pelts if they live in burned areas. The Hudson Bay Company pays premium prices for furs that were trapped in unburned country.

RECREATIONAL RESOURCES

Recreation is a rapidly growing major industry in Alaska. It probably will produce an annual income of $100 million to Alaska within the next few years. Tourists come in increasing numbers every year; and they come earlier and stay later than formerly. They come primarily to see the country and enjoy the beauties of nature — the mountains, forests and rivers, and the novelty of glaciers and unfamiliar species of wildlife.

The map showing frequency of man-caused fires (fig. 57) shows why many tourists are extremely disappointed in what they see along the primary highways and along the Alaska Railroad route. Frequency of these fires is highest along major travel routes. Some have resulted from carelessness and some from road construction activities. Prevention and control of fires in these areas are imperative so that the country can reestablish itself to timber.

Recreational value should by no means be considered as confined to the tourist trade. On weekends and holidays and during vacations, Alaskan families fill the roads as they drive to the woods, the lakes, or the numerous picnic and fishing spots. An average family thinks nothing of getting into the car, or even airplane, and traveling hundreds of miles on a weekend just

USFS & WLS

Figure 6. — Nesting grounds need protection.

BLM

BLM

USFS

Figure 7. — Picnicking, boating, and spectacular scenery attract recreationists.

to enjoy the scenic beauties of the State. People live in Alaska not only to earn their livelihood, but because they are enthusiastic lovers of the outdoors; so they are vitally interested in the maintenance and enhancement of the outdoor recreation resource.

Fire damage to recreational facilities cannot be estimated accurately in dollars. The fisherman, the hunter, the camper, and the picnicker all suffer in an intangible personal way. Only rough estimates can be made to determine how much more traffic would occur if all the land were productive and beautiful. Many categories of business are affected by both the short-term and long-term results of fire. A few of these are: lodging, food, and automotive repair services; aircraft charter and guide business; and photographic and sporting goods merchants.

USFS

Figure 8.— Commercial recreation area near Fairbanks.

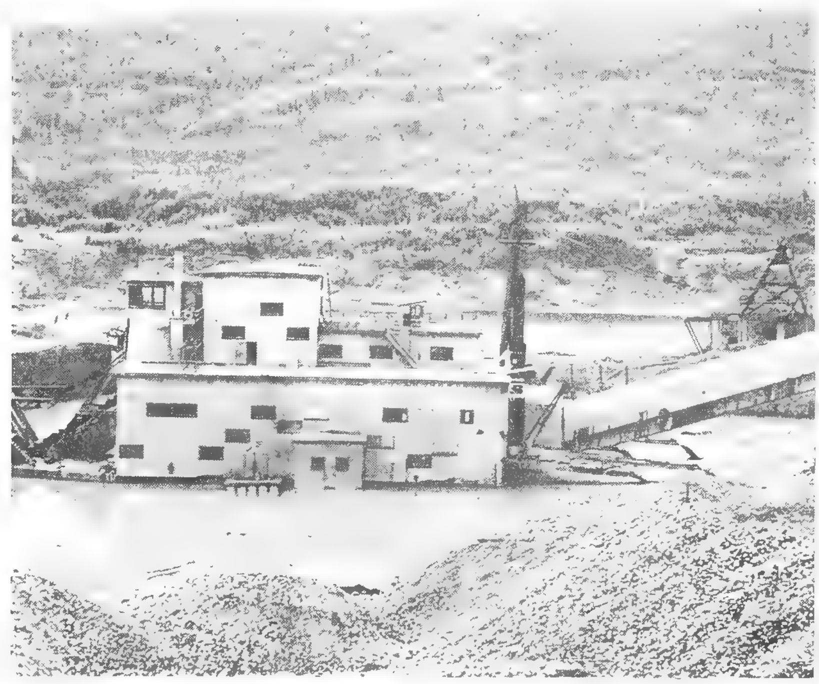
MINING

Mining has been one of the three major industries in Alaska for the last 7 decades. Gold stimulated rapid development of mining in the late 1800's and early 1900's. Most gold mining in western and Interior Alaska is placer mining, and is completely dependent upon water to process gravel and remove the minerals. High costs of production have seriously reduced volume of the mining industry, but it still is far from being eliminated; in 1957, mining was second high in economic value to the State — wildlife was first (Buckley 1957).

Placer mining requires removal of overburden and gravels down to bedrock in order to make the mineral-bearing strata accessible to shovels, dozers, draglines, and other equipment. Preparation of an area, including the cutting of bedrock drains and digging of holes prior to actual mining, is extremely expensive. Floods, always a threat to mining operations, may fill the cuts and cause loss of equipment, work, and time during the short field season which runs usually from early June until late September.

Mining operations often produce silting, which damages rivers and smaller streams. Mining may also be detrimental to stability of individual watersheds. Forest fires can cause any such potentially serious situation to become disastrous.

Oil and gas production is at the threshold of becoming big business. Much of the current exploration, well drilling, and pipeline construction is in timbered country. Protection from large fires is imperative for the safety of workmen as well as for the large investments. Income to the State from oil and gas leases is already substantial. By law, the State receives 90 percent of the Federal revenue, which for the first half of 1959 amounted to $4-1/3 million.



USFS

Figure 9. — Gold mining operation, near Fairbanks.

BLM

Figure 10. — Alaska's first commercial oil well.

WATERSHEDS

Wherever located, an undamaged watershed performs the same useful function: it catches rain or snow and allows the water to percolate into the soil; thus, it controls streamflow in an orderly fashion. A good watershed slows the flow of water into streams during the spring and early summer. It also acts as a storage basin and allows water to flow into streams slowly during the season when precipitation is low.

Many effects of fire on characteristics of soils and watersheds and on species distribution are similar to what is expected in more southerly States. Interior Alaskan soils are generally shallow. Fine-textured soils become poorly aerated and cooled; organic matter tends to remain unincorporated in the mineral soil and to rest on the soil as a mantle. The moss and lichen cover is a good insulator in the summer; its removal causes a lowering of the permafrost level. Though fire may not alter soil texture and structure, it does reduce the infiltration rate and increase overland flow.

Not all ecological effects of uncontrolled fire are detrimental to the environment. Thermal effects on soil temperature are generally favorable, as are the chemical changes. Nutrients that are normally locked up on the cold forest floor are liberated for assimilation by new plant growth.

Interior Alaska has one watershed feature that exists nowhere else in the United States: permafrost. Changes in permafrost resulting from forest fires are discussed further in chapter 3. Briefly, fire destroys the moss insulation and permits warm air and solar radiation to melt the permafrost. The earth on slopes often moves or sags, trees fall over, and the water table drops. Evaporation excessively dries the soil surface after the permafrost level has been lowered; this in turn defeats efforts at revegetation.

USFS

Figure 11. — This accelerated erosion started after surface vegetation was burned; near Fairbanks.

USFS

Figure 12. — Irrigated farmlands depend on productive watersheds; near Fairbanks.

USE OF AIRCRAFT

Alaskans are the most airminded people in the world. On a per capita basis, they own more aircraft and fly more people and freight than any other population group. Airlines must fulfill definitely scheduled flights; people depend upon these flights to run on schedule so that they can carry on necessary business. The State has numerous charter aircraft companies, and an astounding number of private aircraft operates in the State. Some are used for pleasure, but many are for business. These private planes also must be able to fly when the need exists so that their operators and owners can perform their business. An article in a recent issue of the *Alaska Sportsman* (1961, p. 27) stated, "There are an estimated 900 private planes in Anchorage, 200 commercial aircraft, 300 private seaplanes, and 50 commercial seaplanes. An estimated 35 helicopters also register out of busy Anchorage airports." When large fires occur, the atmosphere becomes so smoked up that commercial and private flying becomes nearly impossible.

Aircraft are essential to many firefighting activities — detection, patrol, chemical attack, smokejumping, crew transportation, helicopter use, and servicing of fire crews. Grounding these planes on account of reduced visibility due to smoke sharply pyramids the fire problem. In 1957, smoke covered the entire Interior with such a thick layer that virtually no aircraft operated for days at a time. The only exception was that a few Bureau of Land Management planes were permitted to fly as an emergency measure to service firefighting crews.

Location gives this State extremely strategic importance in the defense of the rest of the United States. Since aircraft are a major military tool, planes dare not be grounded because of smoke-filled air.

USFS

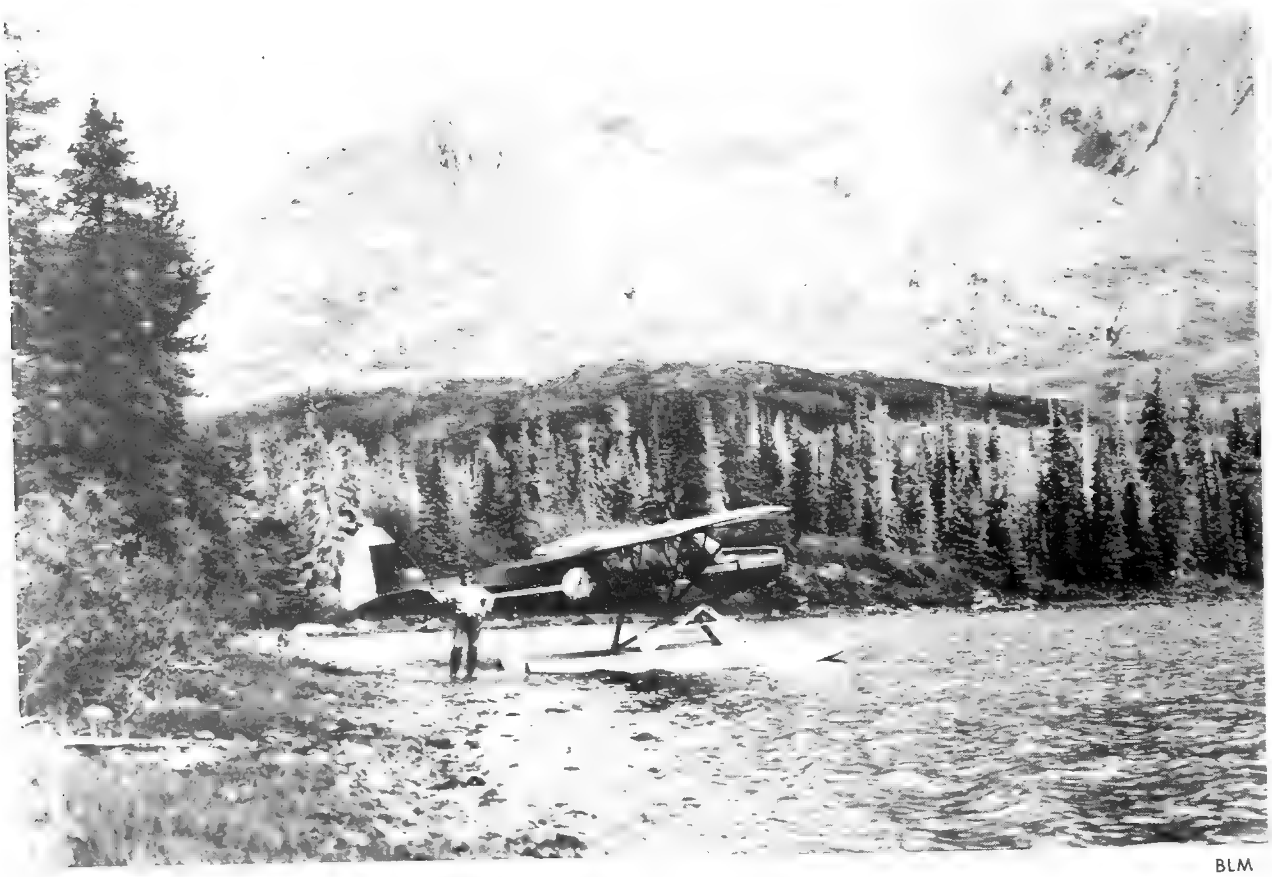
Figure 13. — Defense communication outposts must be protected from forest fires.

USFS

Figure 14. — A small portion of the Anchorage float plane basin.

USFS

Figure 15. — Anchorage International Airport.



BLM

Figure 16. — Alaskans travel on wings.

ASSESSMENT OF DAMAGES

No uniformly acceptable method for assigning monetary values to damage by wildfire has ever been developed. Most fire control agencies use empirical formulas for estimating losses of such tangible items as timber, forage, and improvements. But there is no reliable means of estimating losses of such intangible values as watershed, wildlife, recreation, and potential industry. The final evaluation also depends on several controlling factors such as severity of burn, weather and fuel conditions at the time of burn, topography, and even the time of year.

The Battelle Institute states in the conclusion and recommendations of its report on the cooperative forest fire control problem that no statistically supportable method is now available for evaluating the impact of fire on natural resources, and that further studies on the consequences of wildfire to watersheds, including downstream effects, should be encouraged (Swager, Fetterman, and Jenkins 1958).

The annual reports of the Director of the Bureau of Land Management show assigned estimated damage from wildfire. For the years 1950-58 the average estimated dollar value of damage amounted to approximately 10 cents per acre in Alaska compared to 8.6 cents per acre for all other land protected by BLM personnel.

Three questions arise: (1) How realistic are the present damage estimates? (2) By how much would damage be reduced if the expenditure for protection were doubled or even quadrupled? (3) How much research is warranted to help bring these two figures into a proper economic relationship, bearing in mind the values at stake discussed earlier in this chapter?

Table 44 lists three categories of tangible damage — timber, reproduction, and forage. Since the money value of timber and reproduction in Interior Alaska is now only a potential one, the value assigned to destroyed timber can also be only potential. Persons concerned with developing an assured future supply of wood and fiber know that it is necessary to protect the present crop, but without adequately developed procedures they cannot prove it in actual dollars and cents.

Values for immediate loss of forage can be computed within reasonable limits of accuracy. A more difficult task is estimating the impact on animals that have to graze on other ranges and the hardship on local residents when the game or reindeer that they depend upon for food move out of their area.

Losses of homes, farm property, and business establishments are both tragic and costly to owners. Computation of monetary loss from such misfortunes, however, is rather simple since accepted methods of damage appraisal have been used for many years and are available for that class of property.

No one knows how much employment and revenue may be lost because interested potential investors tend to shy away from establishing businesses or industries in an area where a continuing source of raw material cannot be reasonably assured. This problem certainly exists or will exist in the near future for the wood fiber industry in Interior Alaska. Research and development must aim at establishing and maintaining standards of fire control commensurate with the need for industrial security.

BLM

Figure 17. — Totally destroyed stand of young spruce.

BLM

Figure 18. — More than money was destroyed here, near Fairbanks.

CHAPTER 3

GEOGRAPHY AND CLIMATE

From a fire control standpoint Alaska, like most western States, has some portions that are considered easy, some moderate, and some critical. What makes one area easy and another critical? Usually considered pertinent to this question are the following factors: (1) The geographic arrangement of the land in relation to elevations and general weather patterns, (2) climatic conditions, which are generally influenced by the geographic pattern, (3) weather patterns on a local and short-term basis, and (4) fuels, as influenced by all the above factors. Fuels are dealt with in a separate chapter (ch. 4). The first two factors are described in rather general terms to help set the stage for more specific information that follows in the remainder of the publication.

PHYSICAL GEOGRAPHY

Alaska is by far the largest of the 50 States —a vast expanse of land lying north of the Pacific Ocean, separated from the larger land mass of Siberia to the west by Bering Strait and joined along the 141st meridian on the east to Yukon Territory, Canada. Alaska contains 586,400 square miles (375,296,000 acres); about one-third of this acreage is in the Interior Basin. Geographically, Alaska is divided into seven areas — South Coast, Copper River Valley, Cook Inlet, Bristol Bay, West Central, Arctic Drainage, and the Interior Basin as drawn in figure 19.

SOUTH COAST

The Aleutian Islands and Southern and Southeastern Coastal Areas combine to form a 1,500-mile crescent-shaped coastline; at some points it is 120 miles in depth. At its eastern extremity this area is mountainous, cut by a great number of tidewater bays, sounds, inlets, and fiords. Huge glaciers descend the mountain passes and often flank these shoreline indentations. Mountaintops are above 5,000 feet and several rise to heights of 10,000 to 15,000 feet. The precipitous slopes of the mountains from Kodiak Island eastward are mostly clothed to heights of 1,000 to 3,000 feet by dense stands of spruce, hemlock, and some cedar. The Alaska Peninsula and adjacent islands southward from Kodiak Island are devoid of forests, but are covered with luxuriant growth of native grasses. About half of southeastern Alaska consists of islands. Prince of Wales Island — the largest — is 140 miles long by 40 miles wide. The largest fresh-water streams in the area are the Stikine and Taku Rivers, which rise in British Columbia.

COPPER RIVER VALLEY

Copper River Valley is surrounded by four mountain ranges varying in height from 4,600 to 17,000 feet. The Alaska Range forms the north boundary, St. Elias the east, Chugach the south, and the Talkeetna Range the west. Copper River Valley is nearly 120 miles long and up to 50 miles wide. Icefields and glaciers are the main sources of water for the Copper River. The basin is a high plain with elevations as great as 2,500 feet above sea level. This valley is dotted with numerous lakes surrounded by stands of spruce and birch timber. Many areas within the valley are covered by dense stands of native grass and tundra species.

COOK INLET

Cook Inlet Division embraces most of the Kenai Peninsula, the famous Matanuska Valley, and the delta of the Susitna River. It is bordered by the Alaska Range, and the Talkeetna and Kenai Mountains. Elevation of the valley floor varies from sea level to about 2,500 feet. Vegetation varies from rather luxuriant grasses and some spruce and hardwoods on the Kenai Peninsula to heavy stands of spruce and some very fine birch in the central and northern portions of the Division.

BRISTOL BAY

Bristol Bay Division, nearly 500 miles long by 180 miles wide, drains into the Bering Sea. The Kuskokwim River is the largest river that drains this area.

The coastal and valley portion is undulating to rolling; its elevation varies from sea level to nearly 2,000 feet. It is studded with hundreds of lakes and potholes. On the northwest the zone is bordered by the Kuskokwim Mountains and on the south and east by the Aleutian Range. These mountains vary from foothills to precipitous peaks nearly 9,000 feet high.

The land is clothed with dense growths of tundra and native grass species, but island-fashion stands of spruce and birch timber are scattered over it.

WEST CENTRAL

West Central Division embraces an area 480 miles by 300 miles with a coastline cut by scores of bays into which several rivers and creeks flow. The large delta formed from residue carried by the Yukon and Kuskokwim Rivers, which pass through more than 350 miles of this area, contains a myriad of lakes and bogs.

The topography of this large land mass generally consists of low flat muskeg bogs and undulating hills, varying in height from near sea level to 1,400 feet. However, the southern half of the Seward Peninsula is mountainous and has peaks rising to 3,800 feet.

ARCTIC DRAINAGE

Arctic Drainage Division comprises all of the area north of the Brooks Range Divide, the Kotzebue Sound Area, and the Kobuk and Noatak Rivers. Three-fourths of the 1,200-mile shoreline is north of the Arctic Circle. The Kotzebue Sound Area is a low tideland delta surrounded by gently rolling hills. Most of the land up to 3,000 feet elevation is covered by moss, lichens, brush, and grass, but some dense stands of spruce occupy the most favorable edaphic sites. The arctic slope is a high, rolling plateau, gradually lowering to near sea level, where it is dotted by numerous lakes, muskeg bogs, and rivers. The Meade, Chipp, Colville, and Canning Rivers have their sources in the plateau area of the Endicott Mountains and flow northward into the Arctic Ocean.

INTERIOR BASIN

Interior Basin embraces most of the Yukon River drainage and the upper portion of the Kuskokwim Valley. The Endicott and Philip Smith Mountains, a part of the Brooks Range, delineate the northern limits of the area; between these and the Alaska Range lies the drainage basin of the great Yukon River. The Alaska Range is composed of peaks more than 10,000 feet above sea level, including North America's highest peak, 20,300-foot Mount McKinley.

Major features of the Interior Basin Division are the Yukon Flats on and near the Arctic Circle and the adjacent mountains with elevations up to 6,000 feet. The Tanana River Valley, with an area of about 24,000 square miles, lies north of the Alaska Range, whose glaciers supply most of the southern tributaries of the river. The upper half of the valley is rough and broken, while the lower portion has considerable level and gently rolling country; some of it in the vicinity of Fairbanks is adapted to agriculture. The upper portion of the large Kuskokwim River Valley is dotted by lakes and lesser rivers, many of which are often bordered by timber stands to varying widths. The intervening area is covered by mosses, brush species, and native grasses. The elevation of much of the valley area varies from near sea level to only 2,300 feet.

CLIMATE

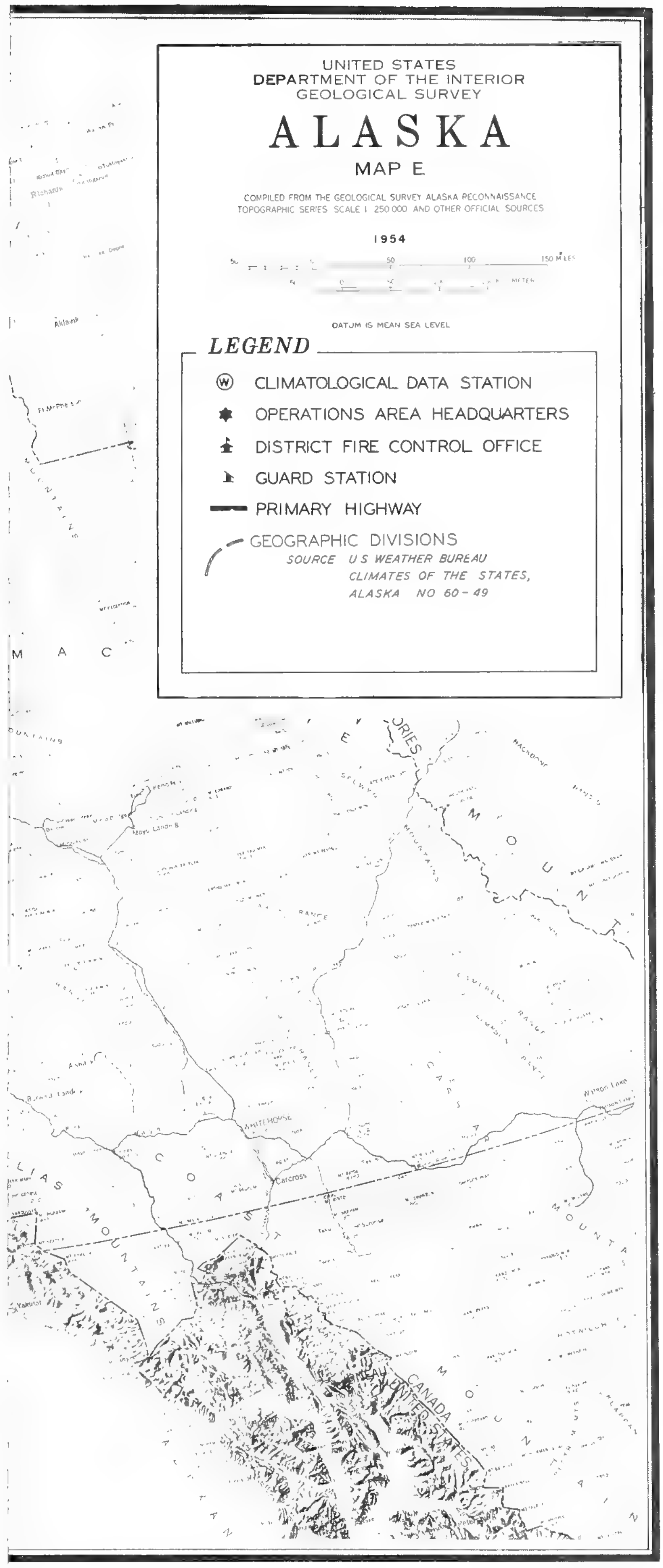
Climatically, Alaska is a land of dramatic contrasts. Annette, near Ketchikan, in southeast Alaska receives 97 inches of precipitation and the temperatures may fall between 1° and 86° F. But at Fort Yukon on the Arctic Circle, only 6½ inches of precipitation falls and the temperature varies from —75° to 100° F. Information in this chapter is confined chiefly to summertime conditions within Interior Alaska.

The movement of these high and low pressure regimes (p. 4) brings different climatic conditions through the State. Variation in temperature, air moisture, precipitation, and the geographic distribution of these factors is important to fire control, particularly during spring and summer seasons (Kincer 1941).

Watson's (1959) study of Alaska climate divides the State into four major zones (fig. 20) that are actually consolidations of the seven geographic divisions outlined in figure 19:

1. Zone of dominant maritime influence.
2. Transition zone.
3. Dominant continental zone.
4. Arctic drainage zone.

Isolines of figures 21 through 27 show the variation of precipitation during the spring and summer months and the normal annual total. The reader should refer to these while studying the ensuing climatic descriptions.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DEPARTMENT OF THE INTERIOR
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ALASKA
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1954
DATUM IS MEAN SEA LEVEL
LEGEND
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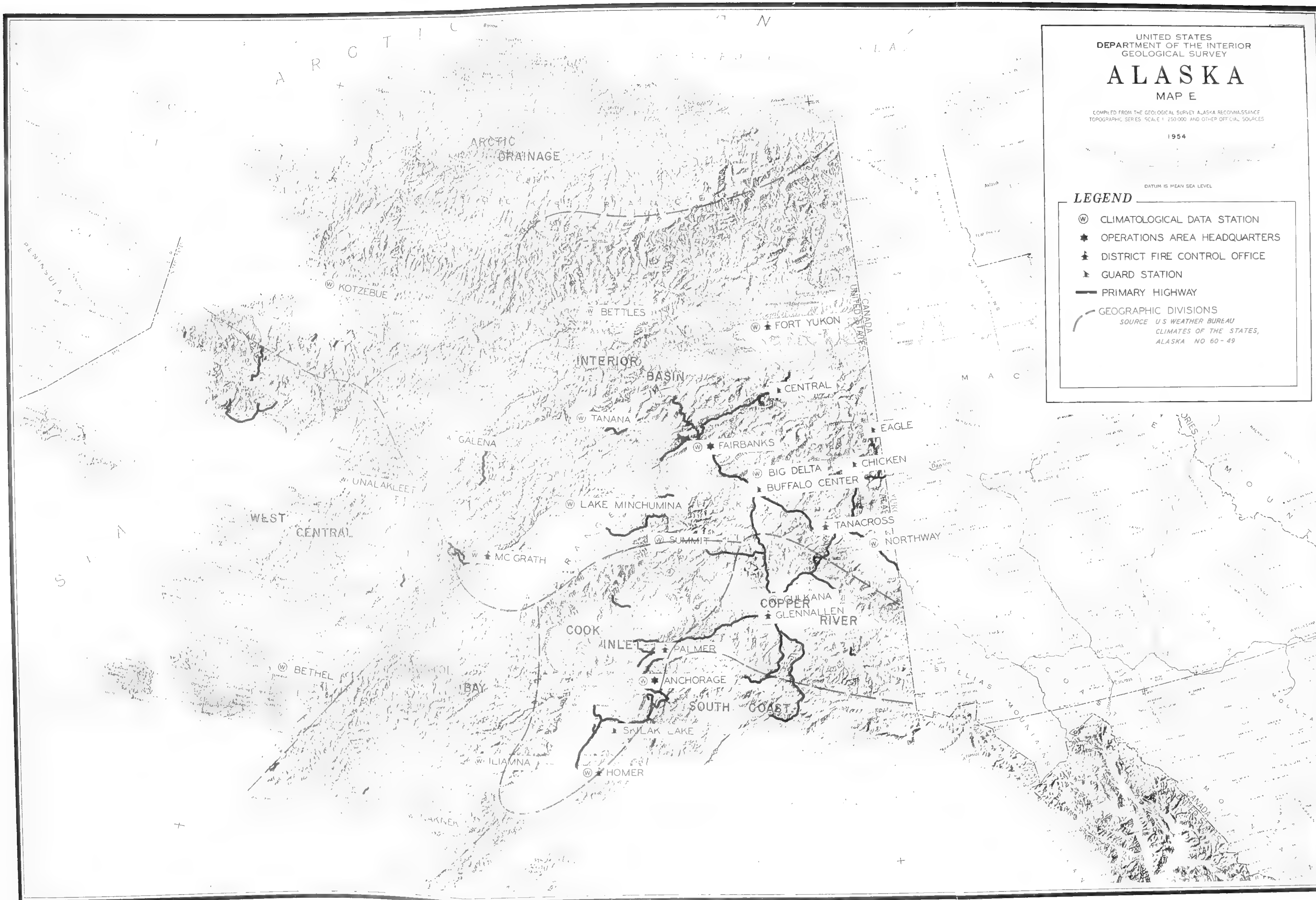
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
GEOGRAPHIC DIVISIONS
SOURCE U S WEATHER BUREAU
CLIMATES OF THE STATES,
ALASKA NO 60 - 49
CANADA
UNITED STATES

Figure 19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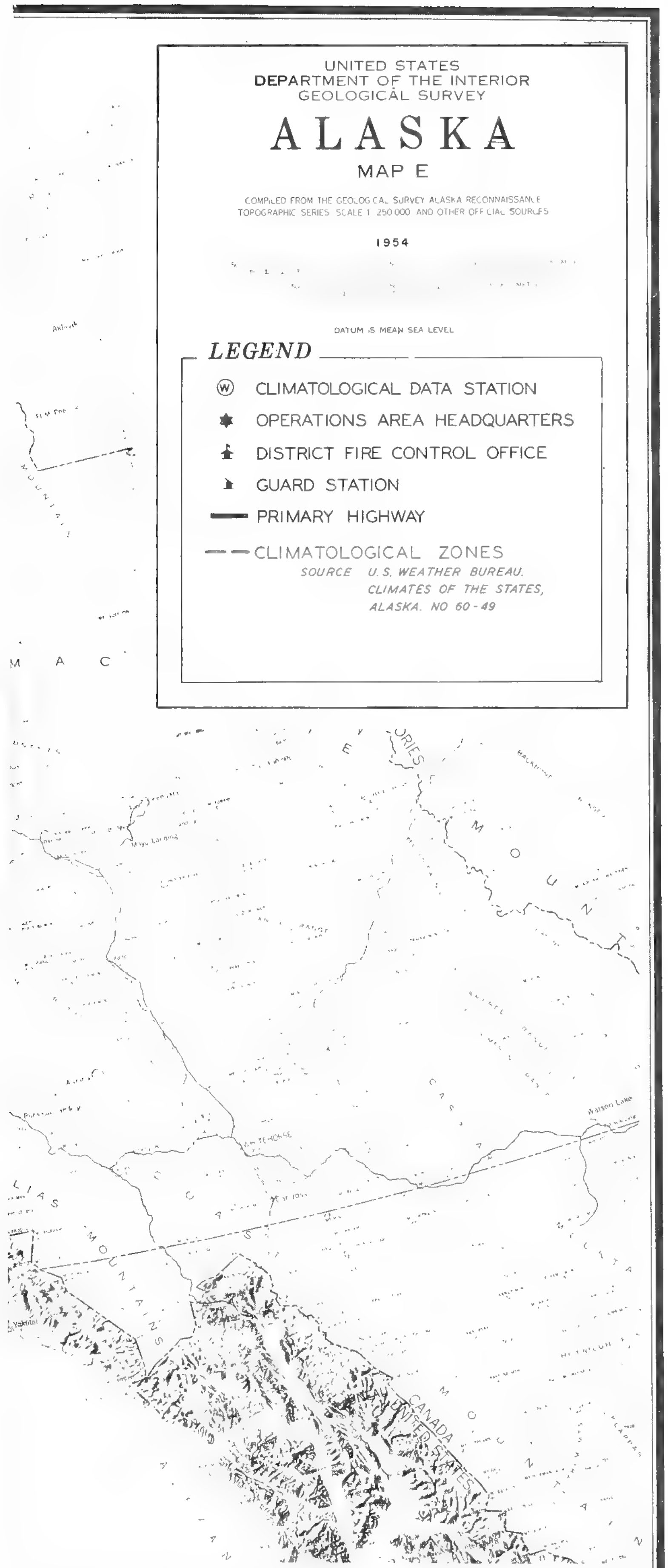
GEOGRAPHIC DIVISIONS
SOURCE U S WEATHER BUREAU
CLIMATES OF THE STATES,
ALASKA NO 60 - 49
ARCTIC
DRAINAGE
INTERIOR
BASIN
WEST
CENTRAL
COOK
INLET
COPPER
RIVER
SOUTH
COAST
BAY
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
GALENA
FAIRBANKS
EAGLE
CHICKEN
BIG DELTA
BUFFALO CENTER
UNALAKLEET
LAKE MINCHUMINA
TANACROSS
NORTHWAY
SUMMIT
MC GRATH
GULKANA
GLENNALLEN
PALMER
ANCHORAGE
BETHEL
SKILAK LAKE
ILIAMNA
HOMER
CANADA
UNITED STATES

Figure 19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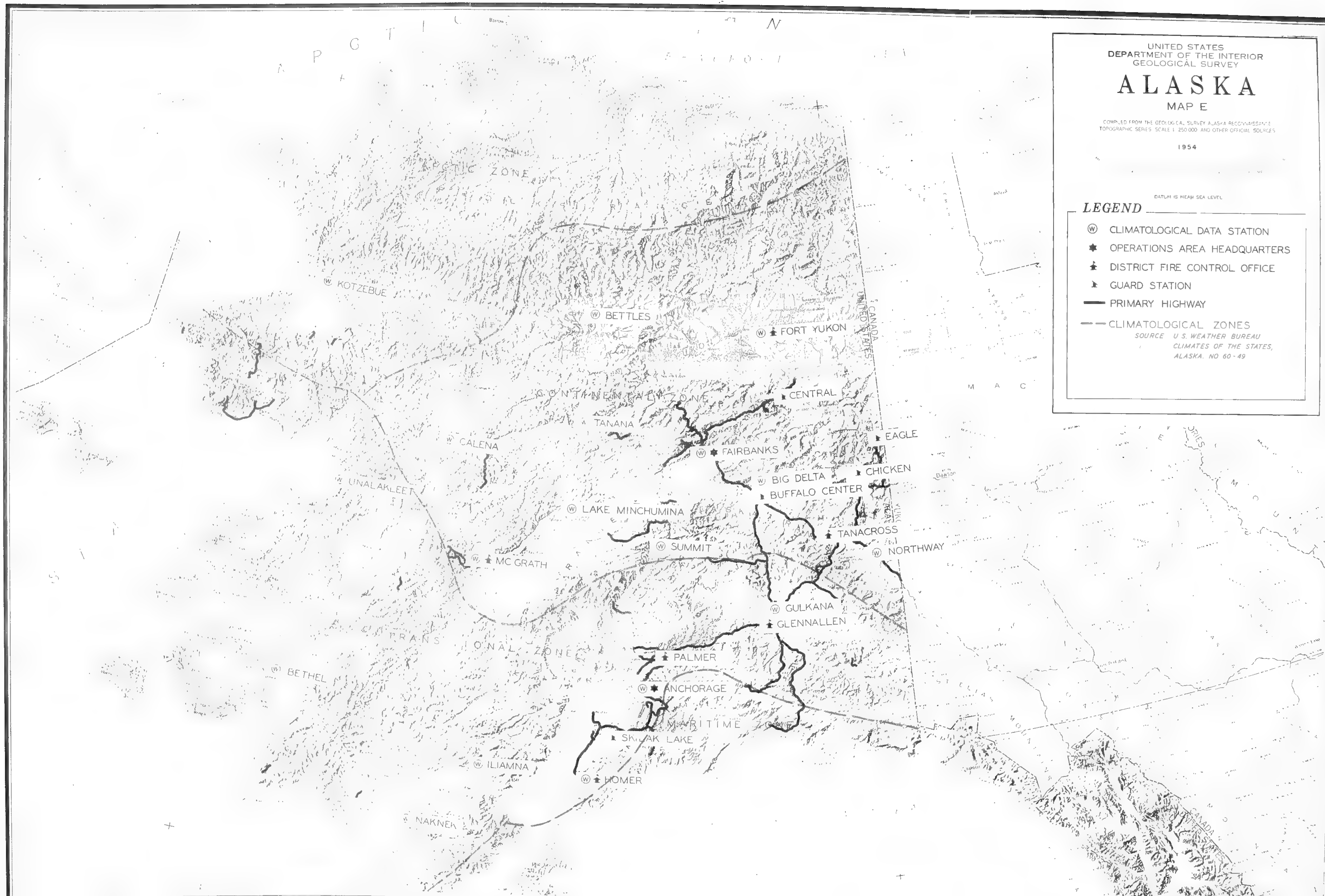
GUARD STATION
PRIMARY HIGHWAY
CLIMATOLOGICAL ZONES
SOURCE U. S. WEATHER BUREAU. CLIMATES OF THE STATES, ALASKA. NO 60-49
Watson Lake
CANADA
UNITED STATES

Figure 20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ARCTIC ZONE
CONTINENTAL ZONE
TRANSITIONAL ZONE
MARITIME ZONE
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
FAIRBANKS
EAGLE
CHICKEN
BIG DELTA
BUFFALO CENTER
GALENA
UNALAKLEET
LAKE MINCHUMINA
SUMMIT
TANACROSS
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
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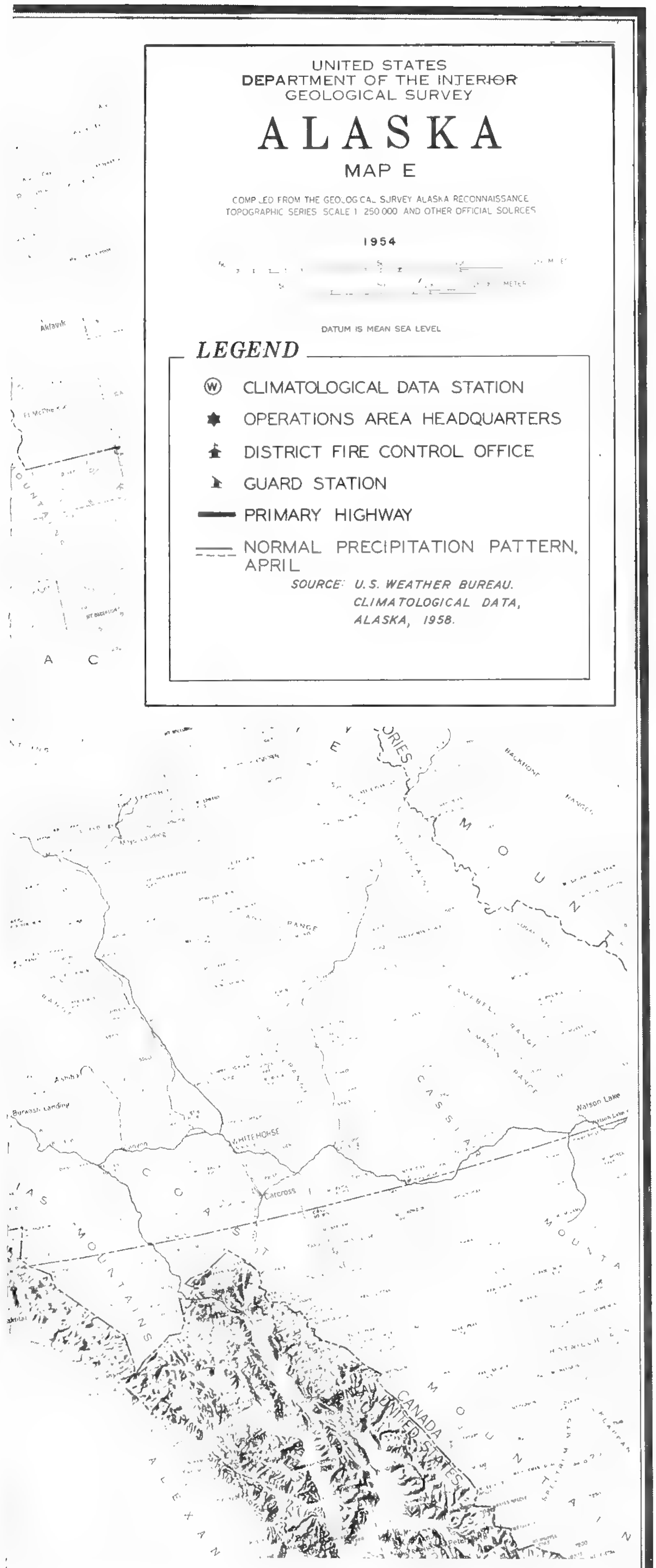
ANCHORAGE
BETHEL
SKILAK LAKE
ILIAMNA
HOMER
NAKNEK
CANADA
UNITED STATES

Figure 20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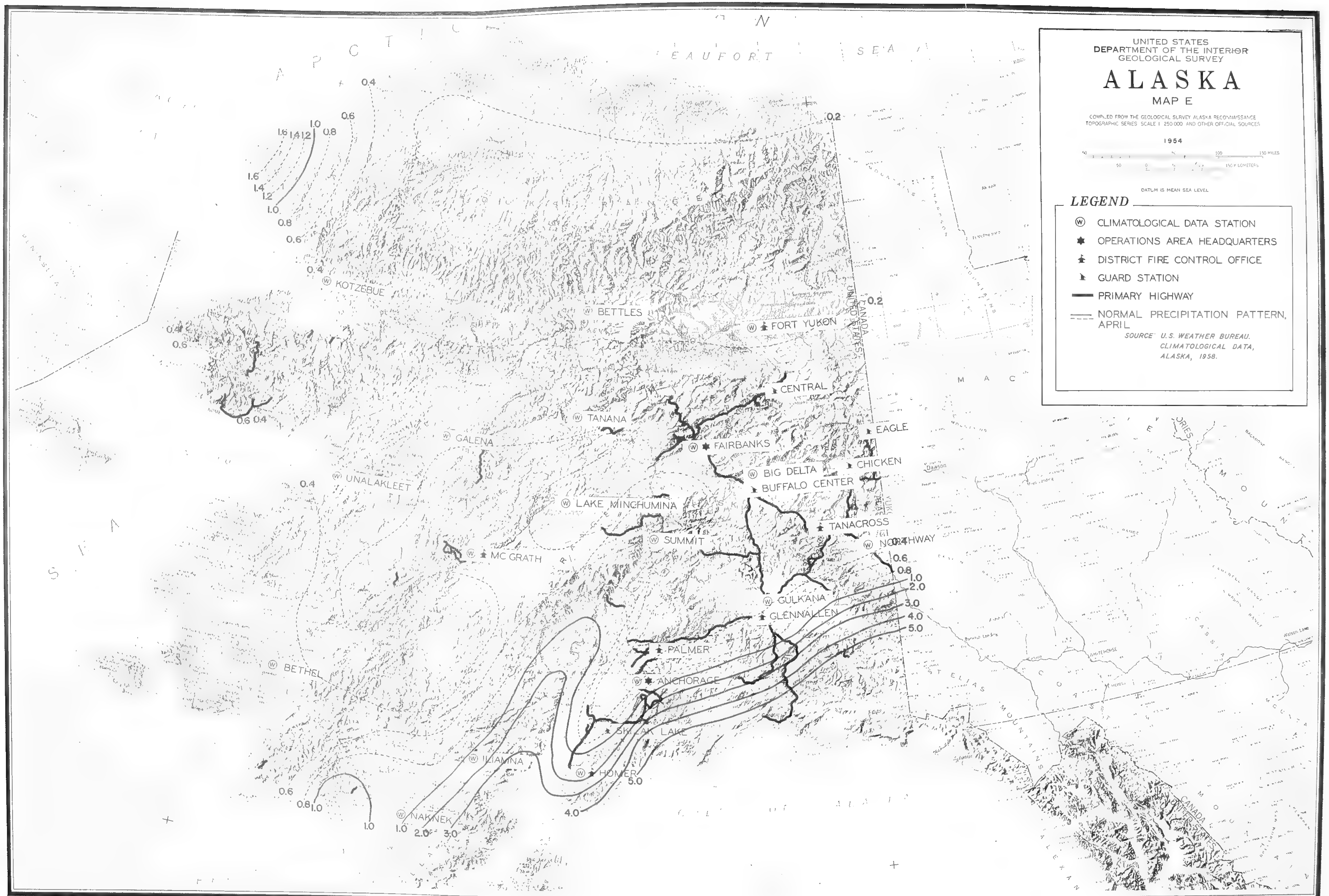
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, APRIL
SOURCE: U.S. WEATHER BUREAU. CLIMATOLOGICAL DATA, ALASKA, 1958.
Aklavik
Whitehorse
Carcross
Watson Lake
COAST
MOUNTAINS
CASSIAR
CANADA
UNITED STATES

Figure 21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GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, APRIL
SOURCE: U.S. WEATHER BUREAU. CLIMATOLOGICAL DATA, ALASKA, 1958.
KOTZEBUE
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FORT YUKON
CENTRAL
TANANA
GALENA
FAIRBANKS
EAGLE
BIG DELTA
CHICKEN
BUFFALO CENTER
UNALAKLEET
LAKE MINCHUMINA
TANACROSS
SUMMIT
NORTHWAY
MC GRATH
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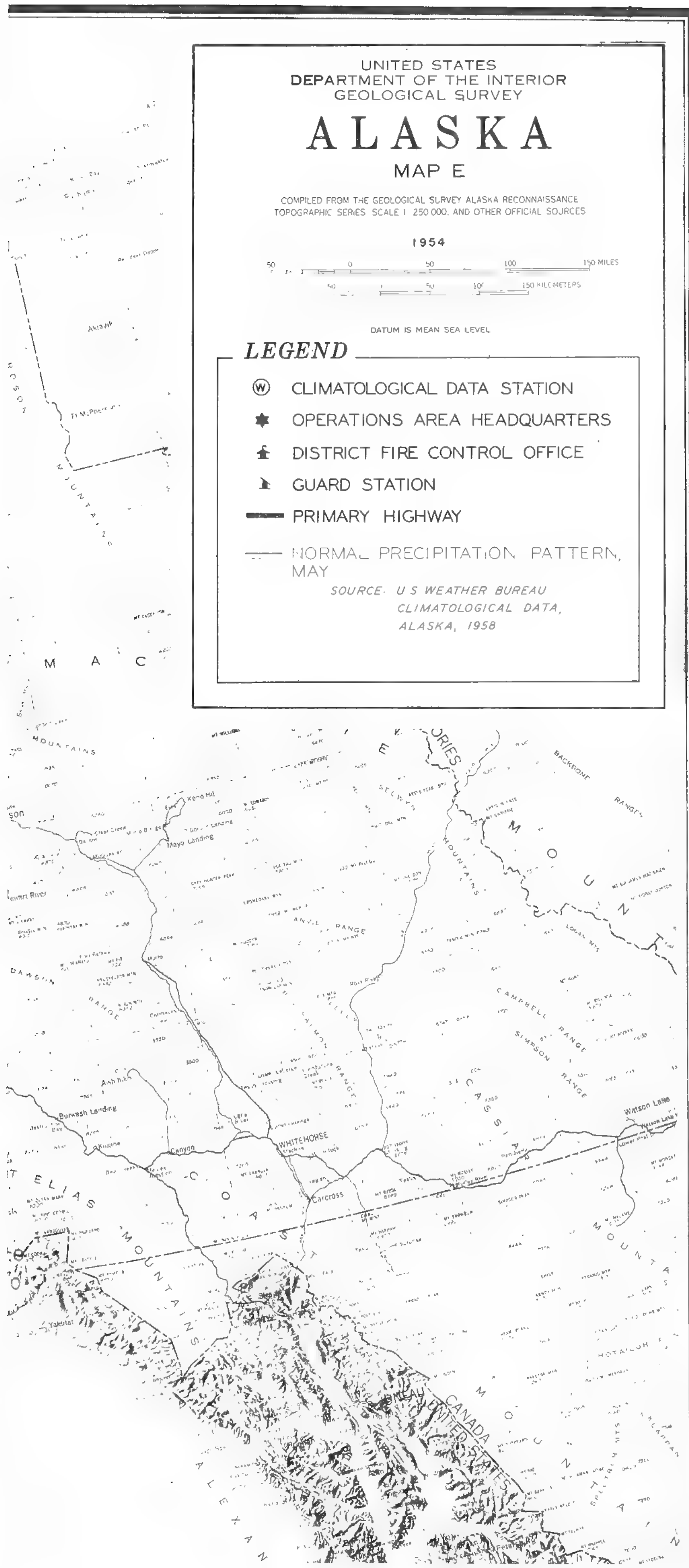
NAKNEK

Figure 21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ALASKA
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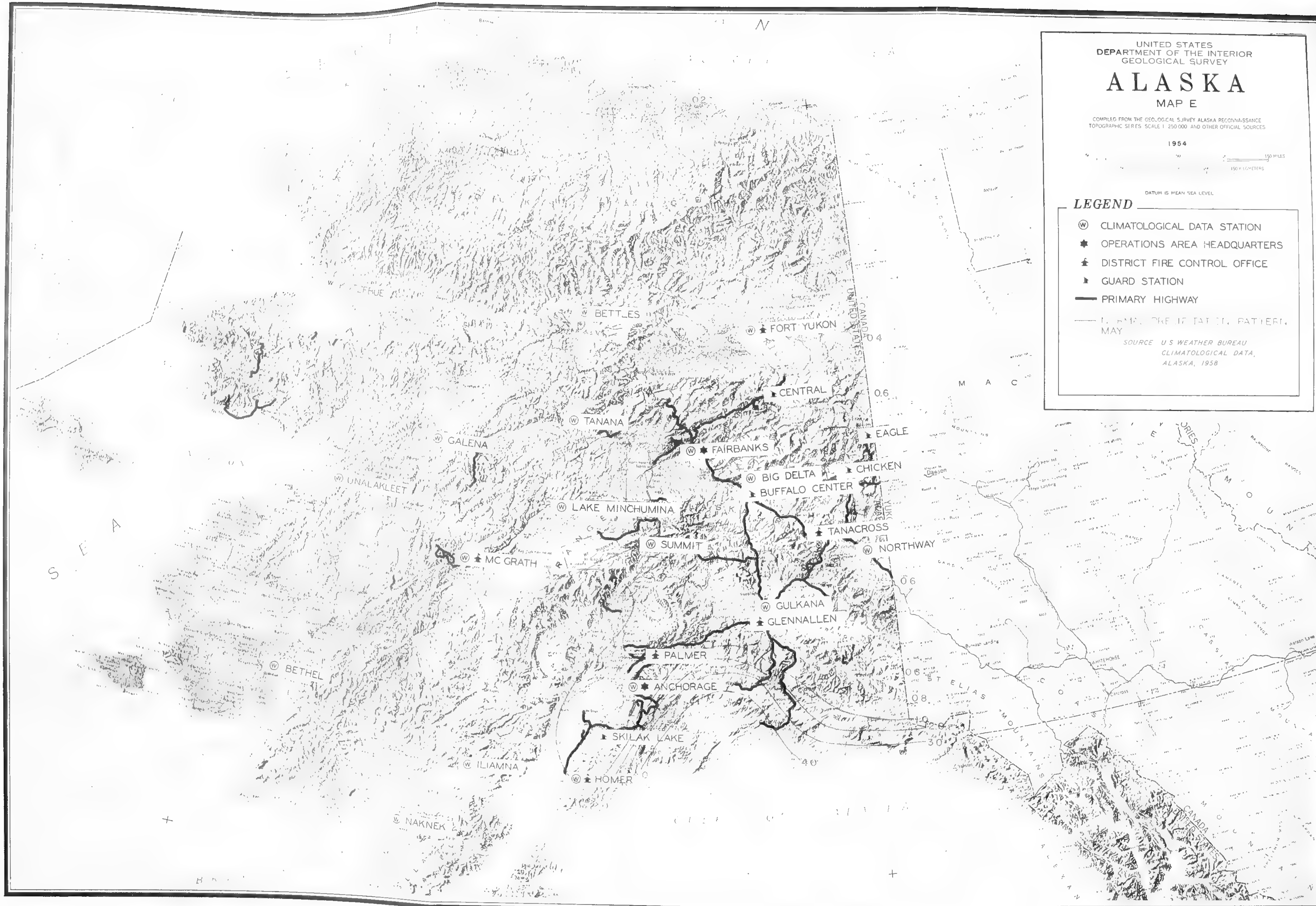
1954
150 MILES
150 KILOMETERS
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, MAY
SOURCE: U S WEATHER BUREAU CLIMATOLOGICAL DATA, ALASKA, 1958
WHITEHORSE
Carcross
Mayo Landing
Watson Lake
Burwash Landing
Canyon
Yakutat
CANADA
UNITED STATES

Figure 22



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SOURCE U S WEATHER BUREAU CLIMATOLOGICAL DATA, ALASKA, 1958
N
BETTLES
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GALENA
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SUMMIT
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GULKANA
GLENNALLEN
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ANCHORAGE
SKILAK LAKE
ILIAMNA
HOMER
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UNITED STATES
CANADA
SEA
ST ELIAS MOUNTAINS
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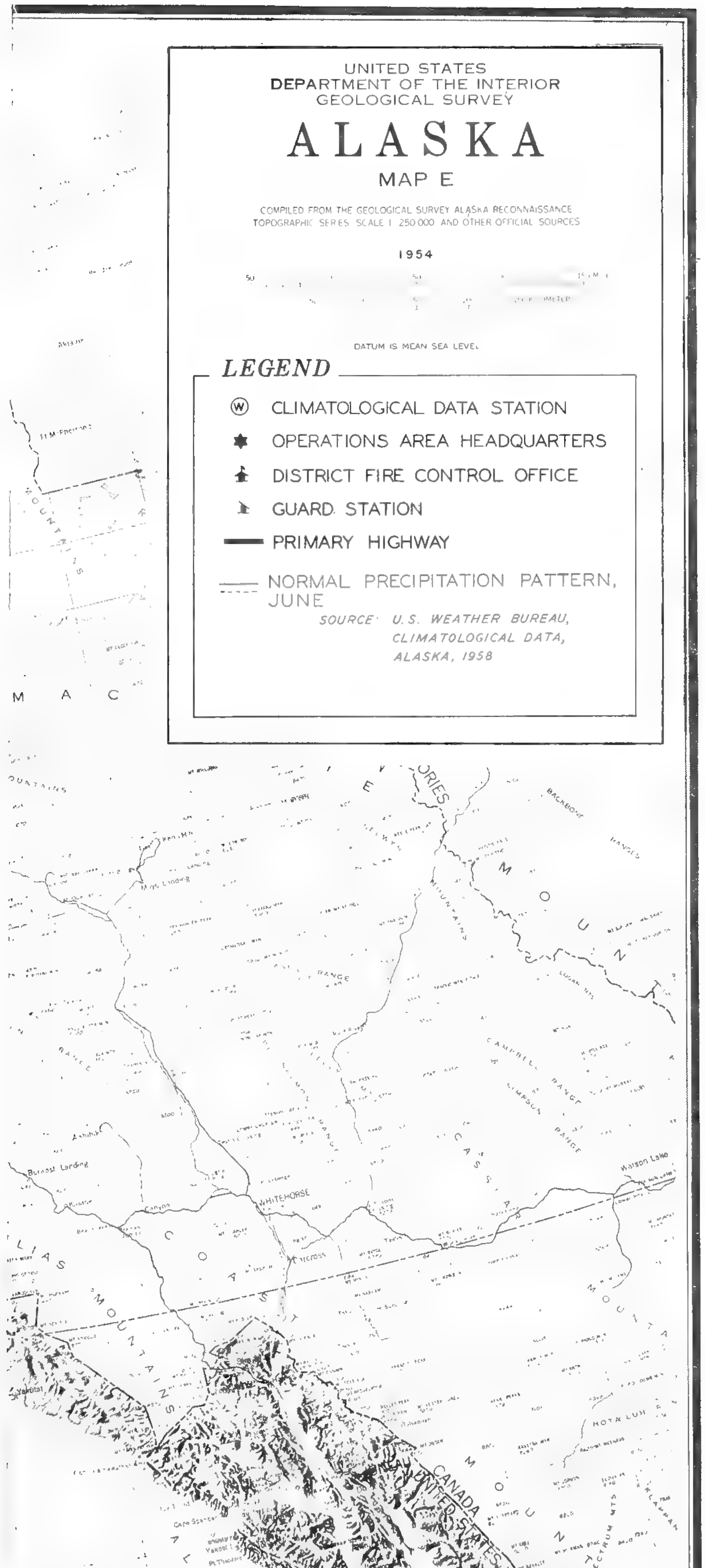
40

Figure 22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PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, JUNE
SOURCE: U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
WHITEHORSE
Watson Lake
CANADA
UNITED STATES

Figure 23

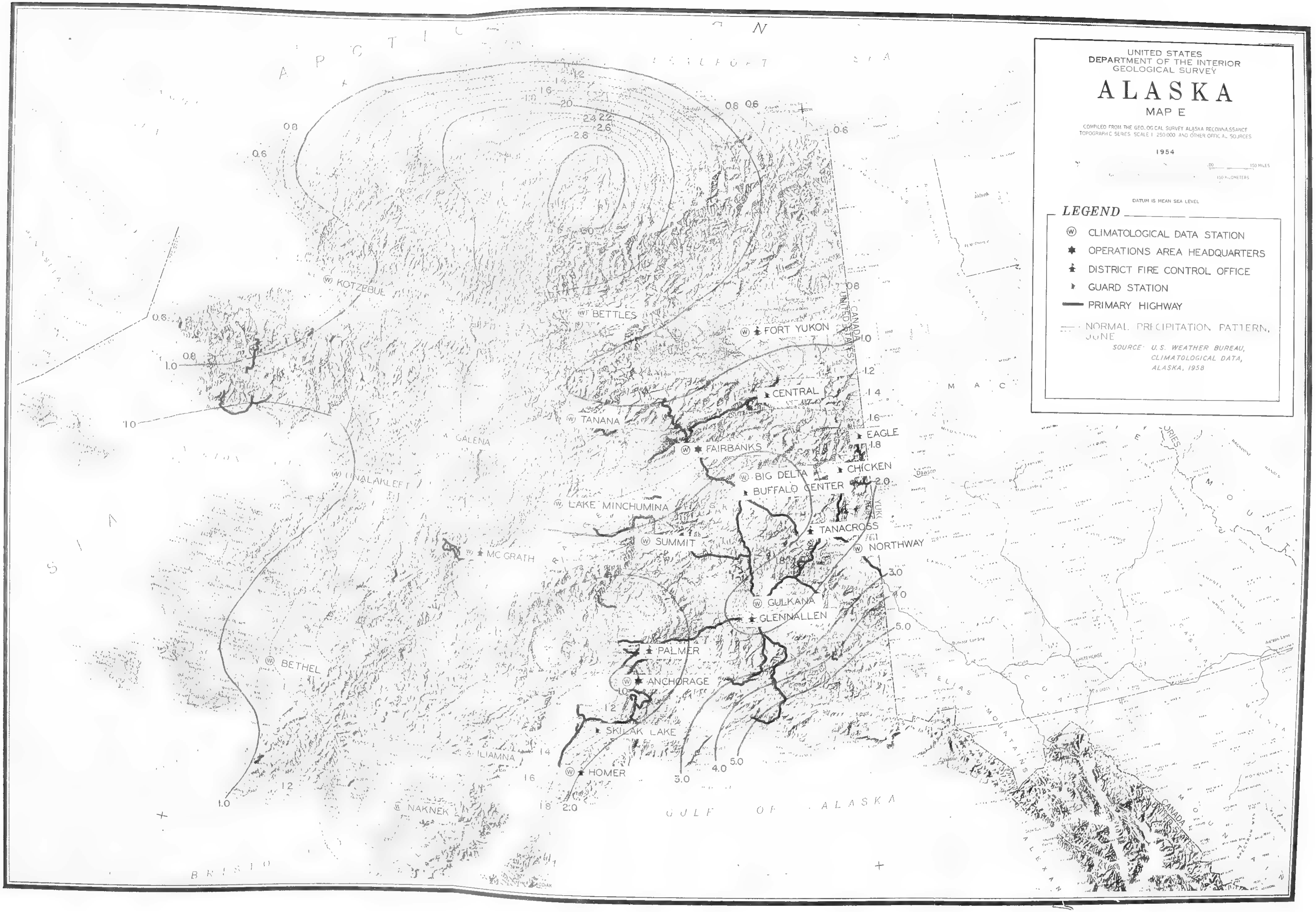

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, JUNE
SOURCE: U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
GALENA
FAIRBANKS
EAGLE
UNALAKLEET
BIG DELTA
CHICKEN
BUFFALO CENTER
LAKE MINCHUMINA
TANACROSS
SUMMIT
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
PALMER
BETHEL
ANCHORAGE
SKILAK LAKE
ILIAMNA
HOMER
NAKNEK
GULF OF ALASKA
CANADA
UNITED STATES

Figure 23

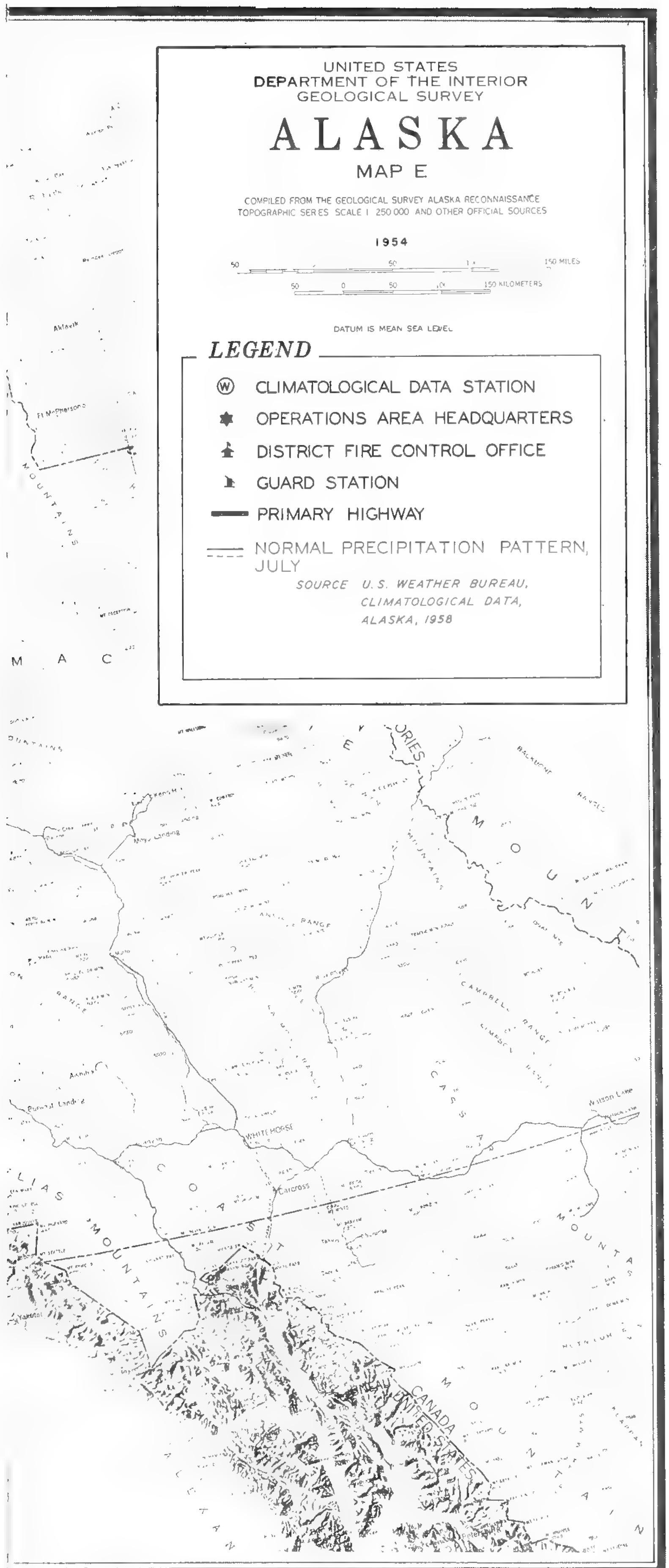

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
COMPILED FROM THE GEOLOGICAL SURVEY ALASKA RECONNAISSANCE TOPOGRAPHIC SERIES SCALE 1:250 000 AND OTHER OFFICIAL SOURCES
1954
150 MILES
150 KILOMETERS
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, JULY
SOURCE U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
WHITEHORSE
Carcross
Wilson Lake
CANADA
UNITED STATES

Figure 24

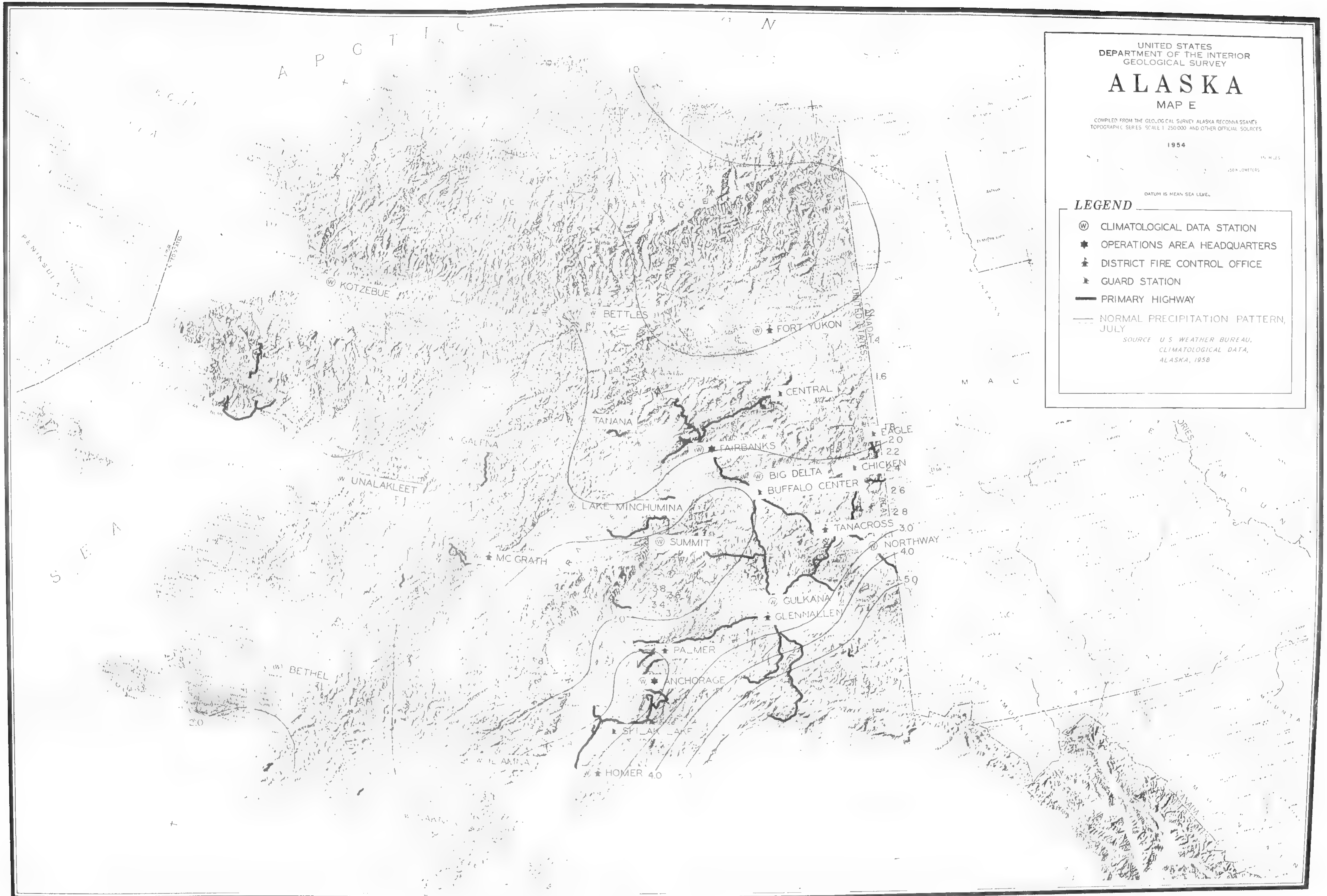

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, JULY
SOURCE U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
GALENA
FAIRBANKS
EAGLE
CHICKEN
BIG DELTA
BUFFALO CENTER
UNALAKLEET
LAKE MINCHUMINA
TANACROSS
NORTHWAY
SUMMIT
MC GRATH
GULKANA
GLENNALLEN
PALMER
ANCHORAGE
BETHEL
HOMER
UNITED STATES
CANADA
1.4
1.6
2.0
2.2
2.4
2.6
2.8
3.0
4.0
5.0
3.8
3.6
3.4
3.2
2.0
4.0

Figure 24

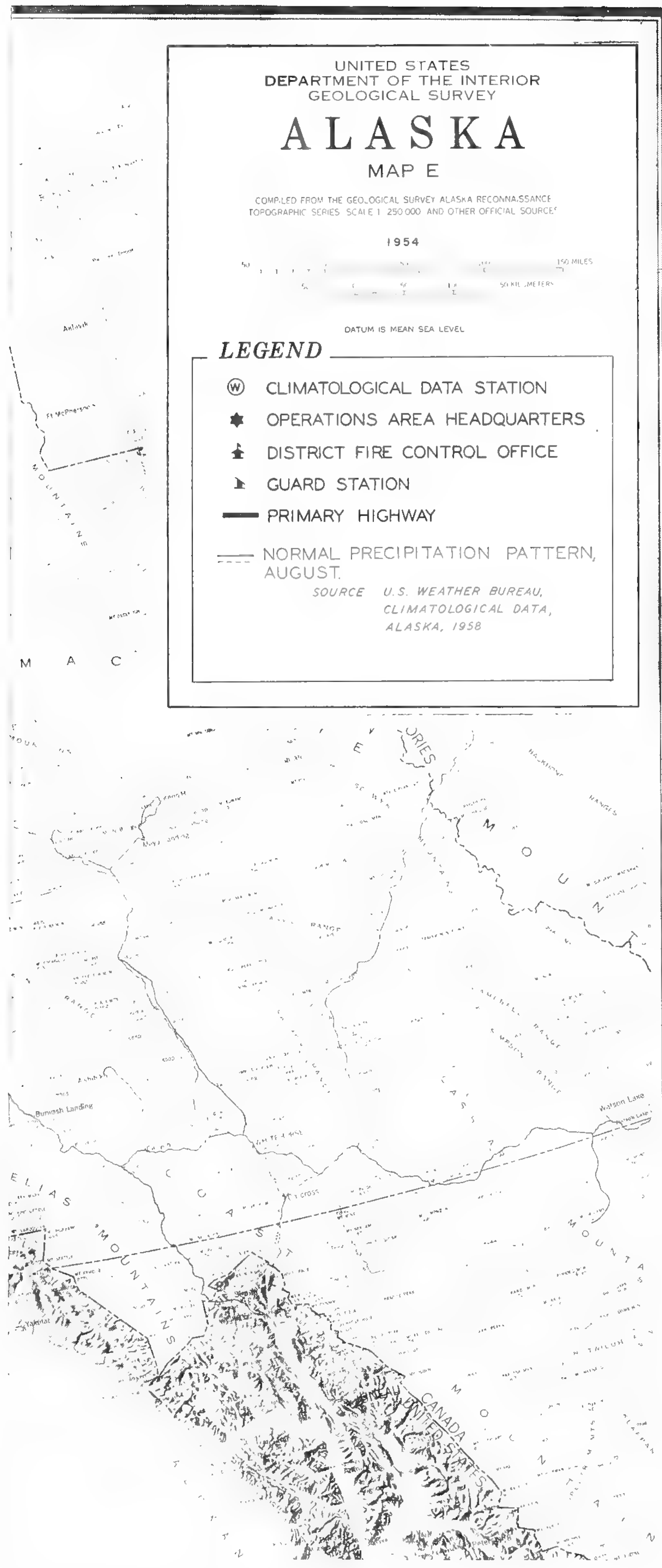

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
COMPILED FROM THE GEOLOGICAL SURVEY ALASKA RECONNAISSANCE TOPOGRAPHIC SERIES SCALE 1:250,000 AND OTHER OFFICIAL SOURCES
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, AUGUST.
SOURCE U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
M A C
Burwash Landing
Watson Lake
CANADA
UNITED STATES

Figure 25

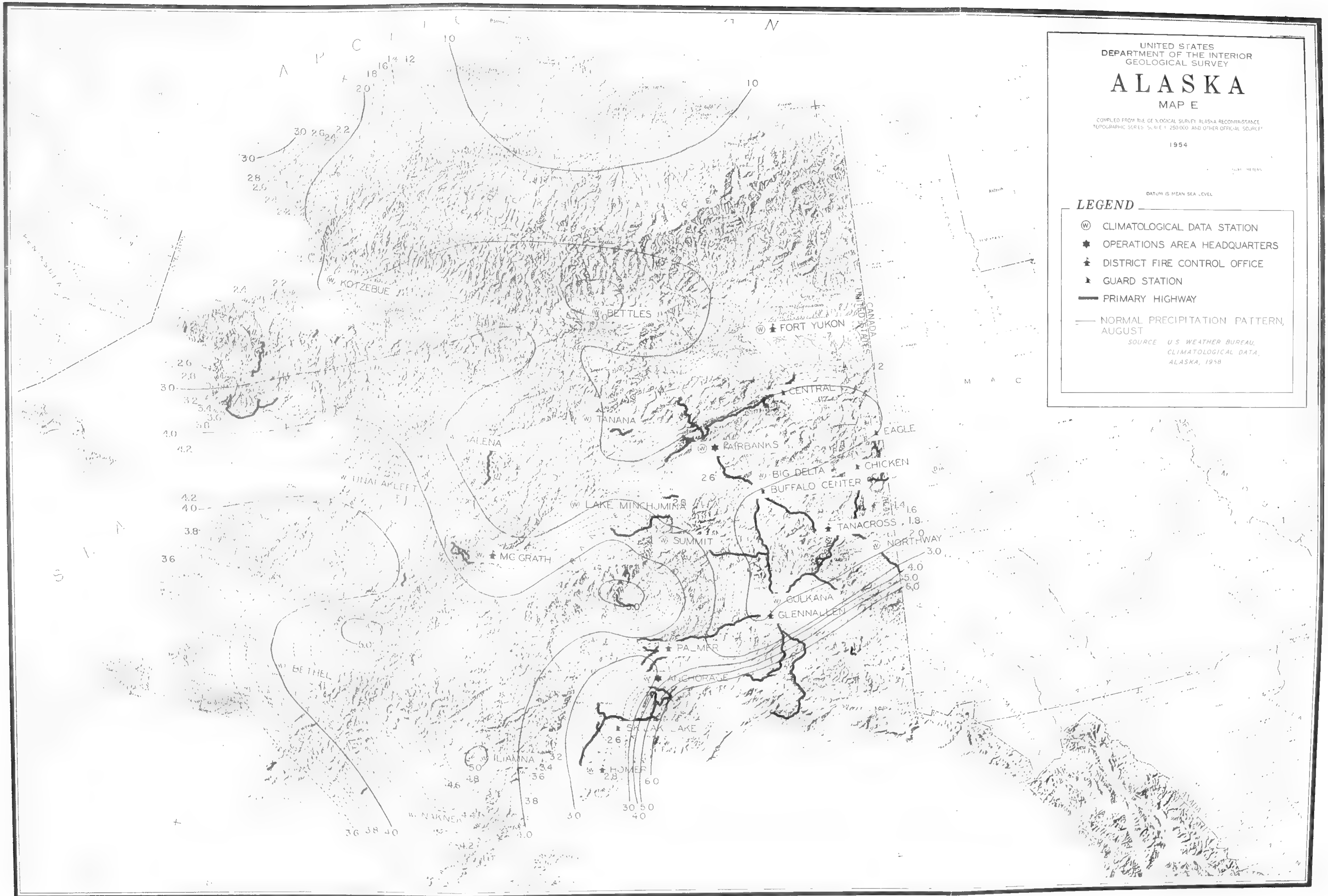
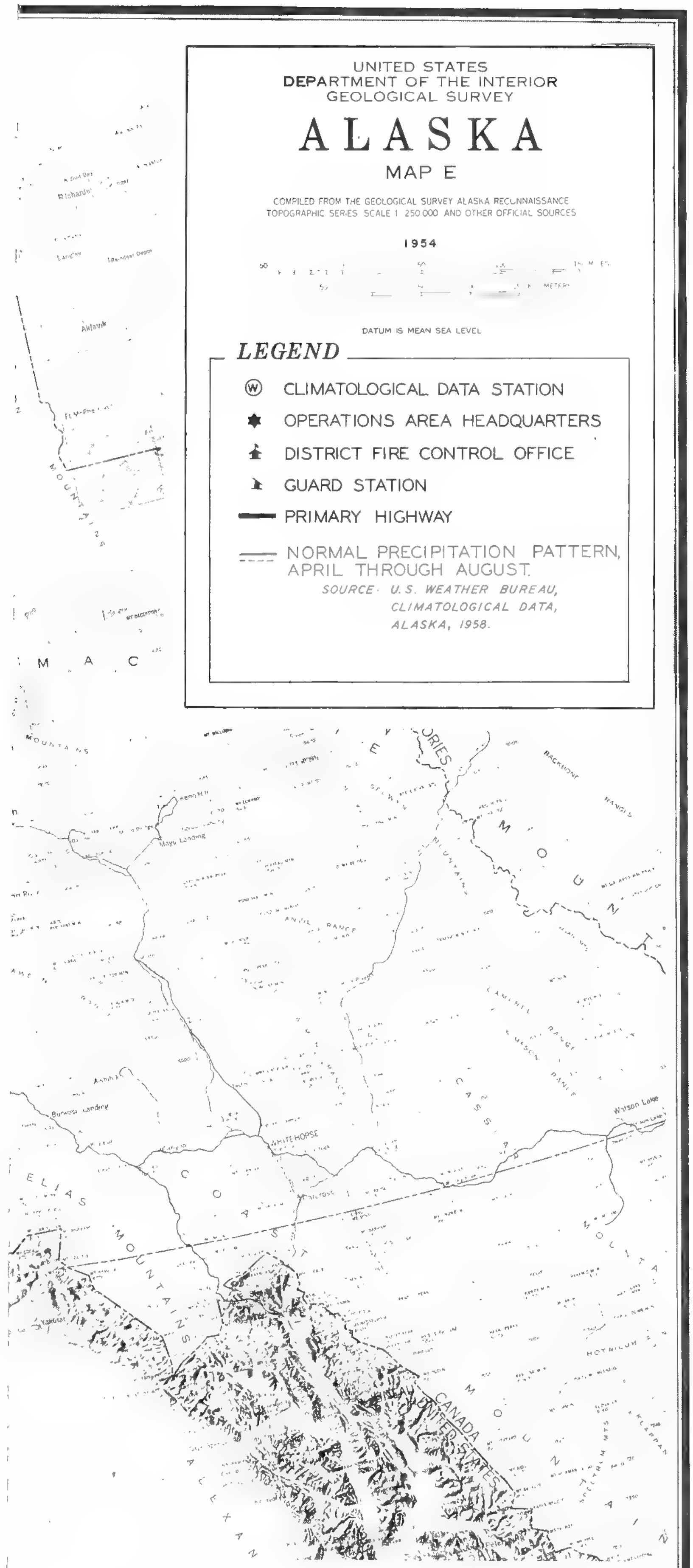

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, AUGUST
SOURCE U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
FAIRBANKS
EAGLE
GALENA
CHICKEN
BIG DELTA
BUFFALO CENTER
UNALAKLEET
LAKE MINCHUMINA
TANACROSS
SUMMIT
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
PALMER
BETHEL
ANCHORAGE
SKILAK LAKE
ILIAMNA
HOMER
NAKNEK
UNITED STATES
CANADA

Figure 25



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
COMPILED FROM THE GEOLOGICAL SURVEY ALASKA RECONNAISSANCE TOPOGRAPHIC SERIES SCALE 1:250,000 AND OTHER OFFICIAL SOURCES
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, APRIL THROUGH AUGUST.
SOURCE: U.S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958.
COAST
MOUNTAINS
CANADA

Figure 26

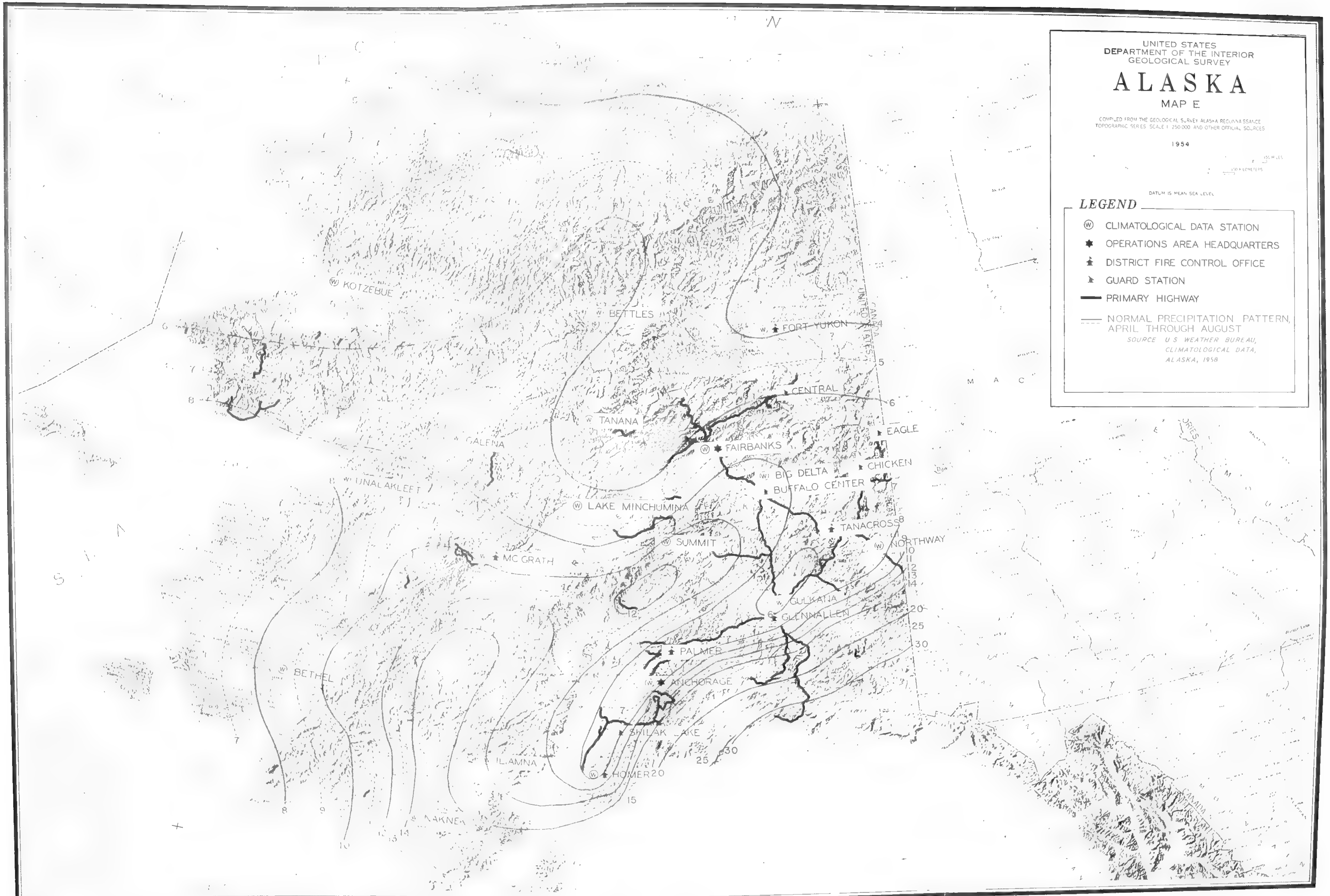

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, APRIL THROUGH AUGUST
SOURCE U S WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
N
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
FAIRBANKS
EAGLE
GALENA
CHICKEN
BIG DELTA
BUFFALO CENTER
UNALAKLEET
LAKE MINCHUMINA
TANACROSS
SUMMIT
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
PALMER
ANCHORAGE
BETHEL
SKILAK LAKE
ILIAMNA
HOMER
UNITED STATES
CANADA

Figure 26

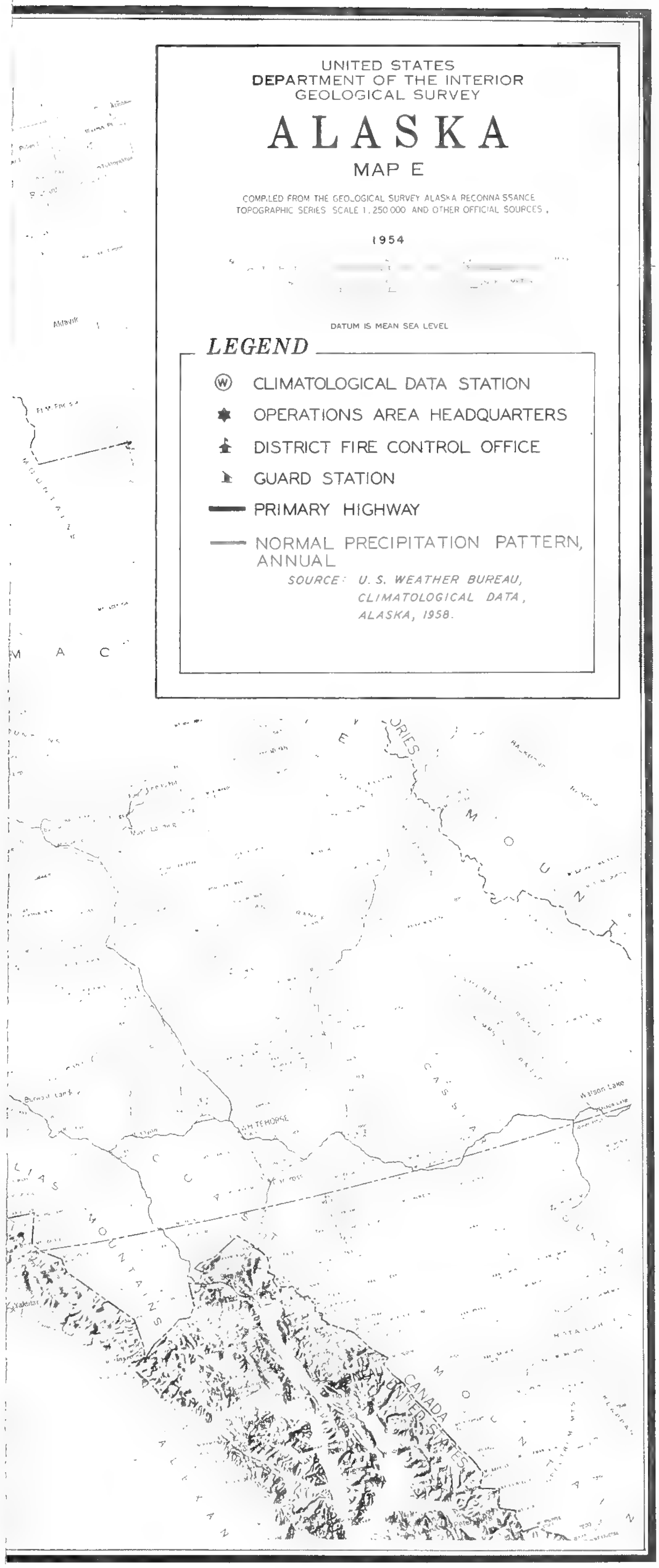

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
COMPILED FROM THE GEOLOGICAL SURVEY ALASKA RECONNAISSANCE TOPOGRAPHIC SERIES SCALE 1:250 000 AND OTHER OFFICIAL SOURCES.
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, ANNUAL
SOURCE: U. S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958.
CANADA
UNITED STATES

Figure 27

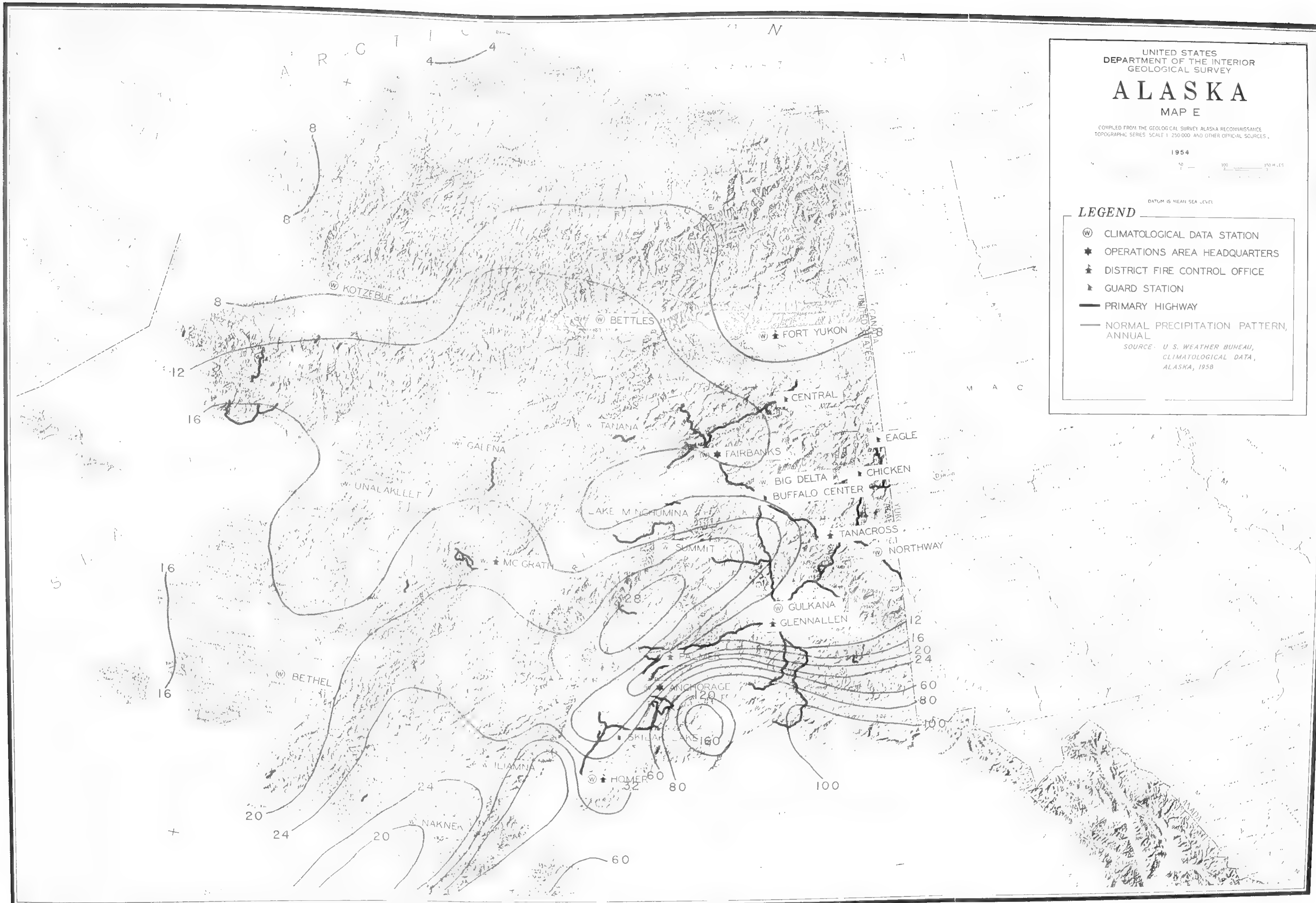

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
NORMAL PRECIPITATION PATTERN, ANNUAL
SOURCE: U. S. WEATHER BUREAU, CLIMATOLOGICAL DATA, ALASKA, 1958
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
GALENA
FAIRBANKS
EAGLE
CHICKEN
BIG DELTA
BUFFALO CENTER
UNALAKLEET
TANACROSS
SUMMIT
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
PALMER
ANCHORAGE
BETHEL
ILIAMNA
HOMER
NAKNEK

Figure 27

ZONE OF DOMINANT MARITIME INFLUENCE

Ruggedness of the topography in this zone markedly affects local climatic conditions. It produces great differences in temperature and precipitation in local areas that are not very far apart.

Climatic conditions at individual locations in this zone are characterized by small variations in temperature, high humidities, high fog frequency, considerable cloudiness, and abundant precipitation.

Extremes of temperature are quite localized and usually of short duration. The warmest temperatures usually come in late July or in August. Throughout the Maritime Zone only about one station in 15 reaches or exceeds 90° F. The mean temperature during these months is near the mid-fifties.

Temperature changes between seasons are gradual; the length of the growing season varies considerably from one year to another. The average freeze-free period varies from 120 days in the north to 150 days in the south. Freeze-free periods within any given locality vary within wide limits.

The overflow of cold air from intense high pressure cells over the mainland interior produces downslope winds that attain destructively high speeds at times. Because of its exposure to the open sea, the entire Maritime Zone is vulnerable to strong winds associated with intense cyclonic circulations that frequent these northern ocean areas. Throughout the coastal area the rugged terrain produces extremely localized wind conditions.

Precipitation ranges from about 25 inches annually in the northwest portion to 221 inches in the southeast. The steep terrain, rising out of the sea, creates topographic inducement for the high rates of precipitation along the northern Gulf Coast.

Visibility is usually low because of cloudy and foggy weather. Fog, usually the advective type, occurs frequently during the summer over the Aleutians and often drifts eastward to blanket the western Gulf Coast.

TRANSITION ZONE

The change from a maritime to a semicontinental climate characterizes the Transition Zone. This change is rather abrupt along the boundary between the South Coast and Copper River Divisions because of the sharp ridge of mountains along this boundary. The Bristol Bay and West Central portions have a gradual climatic transition since moisture-laden air moving toward the interior meets no formidable mountain barriers. Typical maritime features become less prominent farther inland: temperature varies more markedly; humidities are lower; cloudiness declines; and precipitation totals recede.

The Copper River Basin has extremely cold winters, but maximum temperatures reach 90° to 95° F. in summer. This climatic feature of the Copper River Basin indicates that its weather pattern approaches that of the Continental Zone. In areas more directly affected by maritime influences, extreme highs range around the mid-eighties.

The average freeze-free season varies from 52 to 132 days. The 169-day freeze-free period recorded at Homer one year was exceptional.

Precipitation in the Transition Zone markedly decreases from the high averages in the Maritime Zone. A drastic reduction in precipitation in the Copper River Valley and land westward to the upper Matanuska Valley is caused by the configuration of the sheltering Chugach Range. Thunderstorms are common in the Copper River area during the summer.

Precipitation generally ranges from 10 to about 30 inches. A few local areas receive heavy precipitation (75 to 80 inches) because southeasterly winds resulting from low pressure centered near the Alaska Peninsula are hardly affected by sheltering terrain. In contrast, the Kenai Range shelters the western Kenai Peninsula from the southeasterly winds, and the total precipitation there is comparable to that in Matanuska Valley (15 inches at Palmer). On the more exposed southern tip, annual totals average 25 to 40 inches.

The Aleutian low pressure cell is usually weak in early spring; hence, April has the least precipitation of any month of the year at practically all points over the zone except the Copper River portion. Precipitation increases markedly over the mainland beginning in late June. The low tends to move northward across the Bering Sea and brings a rather persistent southwesterly flow into the Interior. During August cloudy, rainy weather predominates and the interior points of the West Central portion receive measurable precipitation on 4 days out of 5. The westward drift of the low becomes pronounced in late November or early December, and precipitation declines rather sharply over most of the Transition Zone.

The permafrost area varies with summer warmth and winter cold, but it extends southward well into the northern portions of this zone. It is present from the northern slopes of the Wrangell Mountains through the Glennallen and Holy Cross areas, along the inland borders of Cook Inlet, Bristol Bay, and West Central portions. The amount of continuity is shown in figure 28.

Over the Copper River and Cook Inlet portions, winds are usually light, chiefly because of the sheltering by nearby mountain ridges. Strong, localized winds develop in some areas as the result of downslope drainage. Most frequent observations of these winds have been in the lower Matanuska and Knik River Valleys, mostly during the winter. These strong winds may persist for days when even slightly reinforced by flow patterns usually associated with low pressure systems centered near Kodiak Island or the Gulf of Alaska. Certain areas of the Bristol Bay and West Central portions are relatively unsheltered and are frequented by strong winds that often extend their effectiveness well into the interior.

DOMINANT CONTINENTAL ZONE

Two major factors contribute to the typical continental climate: (1) the area's remoteness from the open sea, and (2) mountain barriers that prevent inland movement of marine air.

The Interior Basin experiences great seasonal temperature extremes. Maximum temperatures reach or exceed 90° F. almost every summer. Fort Yukon and Eagle have daily maximum readings averaging 70° to 75° F. during July and August. Prolonged daylight in early June through late July contributes strongly in maintaining high temperatures. The sun remains above the horizon continuously for about 1 month at Fort Yukon beginning about June 5. During this season, the average diurnal temperature change is about 30° F.; however, ranges of only 10 degrees have been recorded.

The Interior Basin has recorded the highest and lowest readings for all of Alaska. Temperatures at Fort Yukon have ranged from a high of 100° F. to a low of —75° F. Combined with its counterpart in Canada's Northwest Territory, the Interior Basin records provide a classic example of the northern hemisphere continental climate.

Terminal dates of the freeze-free season (mid-May to late August) can be depended on as a result of the sharp rise in spring temperatures and an equally sharp decline in the fall.

Permafrost underlies the soil in most of the Interior Basin in spite of the warm summertime temperatures. Ground temperatures remain rather cool except for a shallow surface layer. Gradual thawing of the permafrost during the summer allows ice-cold water to permeate the soil layers immediately above it. The cooling effect, when extended to the soil mantle utilized in vegetal growth, slows seasonal production of vegetation.

The Interior Basin is almost surrounded by a high ridge of mountains; their sheltering effect is a primary cause for the light precipitation (6 to 14 inches) in this area. Most of it falls in June and July, but occasionally some occurs in August. Average monthly rainfall during these months totals close to 2 inches — slightly less than averages for the growing season over the central and western parts of the Dakotas. Total summer precipitation may vary widely within relatively short distances chiefly because shower-type precipitation predominates. In local areas thunderstorms may occur on several consecutive days.

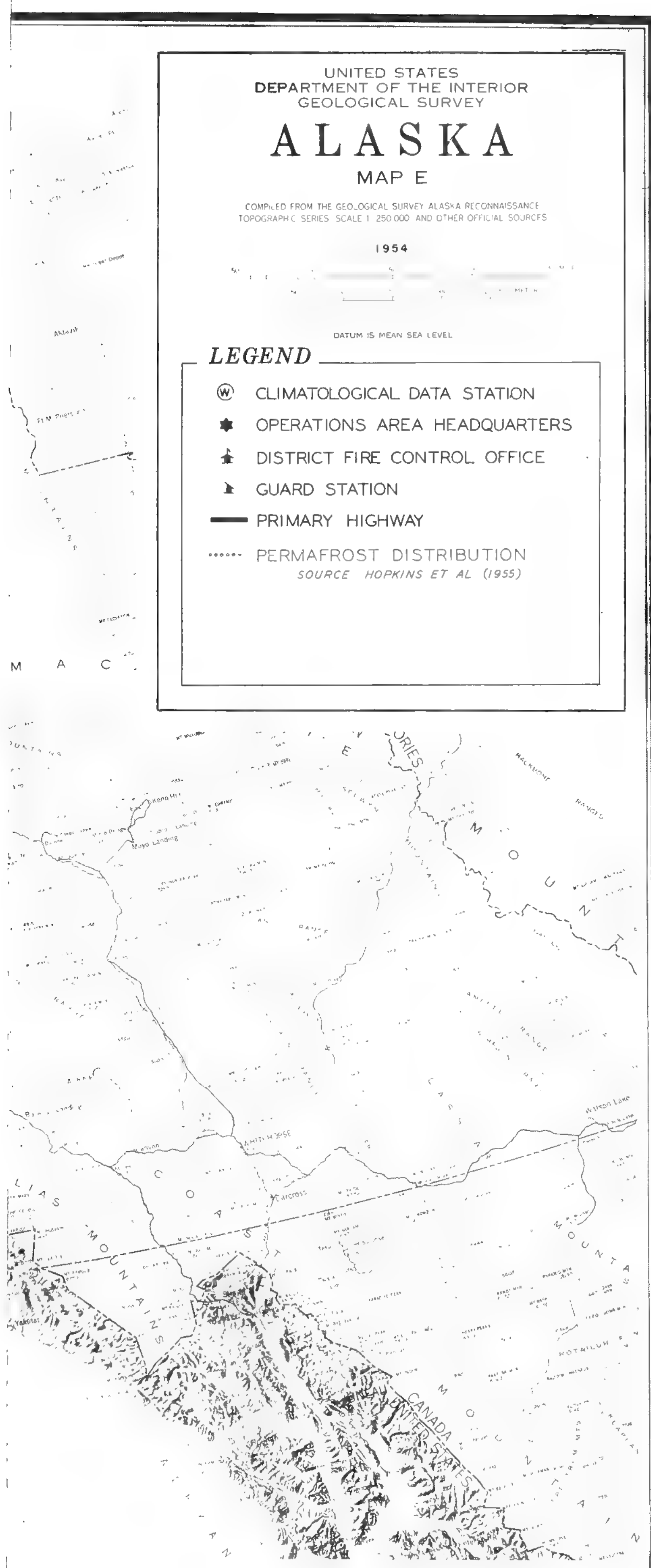

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
PERMAFROST DISTRIBUTION
SOURCE HOPKINS ET AL (1955)
CANADA
UNITED STATES

Figure 28

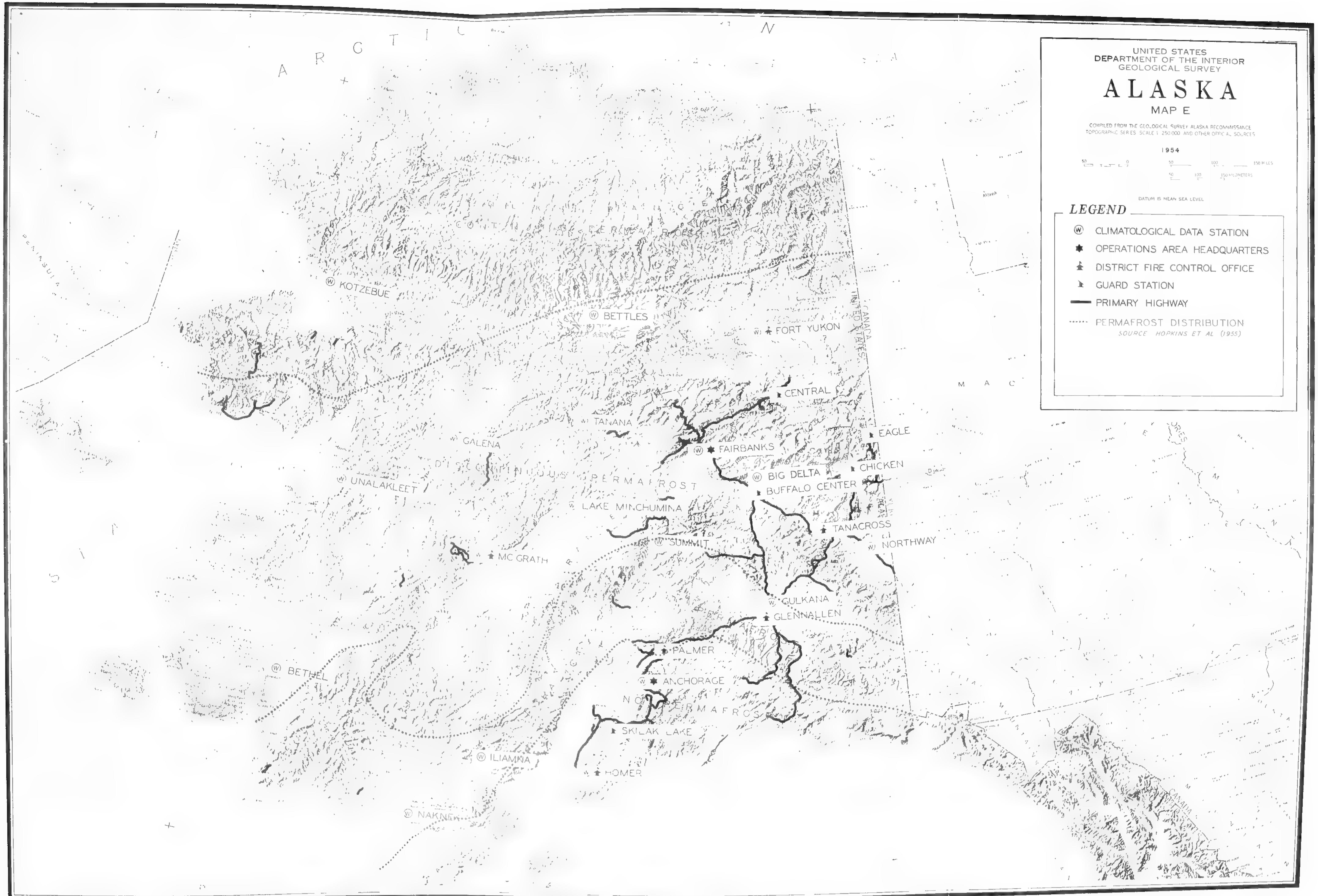

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
PERMAFROST DISTRIBUTION
SOURCE HOPKINS ET AL (1955)
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
EAGLE
GALENA
FAIRBANKS
CHICKEN
BIG DELTA
UNALAKLEET
BUFFALO CENTER
LAKE MINCHUMINA
TANACROSS
SUMMIT
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
PALMER
BETHEL
ANCHORAGE
SKILAK LAKE
ILIAMNA
HOMER
NAKNEK
PERMAFROST
UNITED STATES
CANADA

Figure 28

ARCTIC ZONE

Climatic conditions of the Arctic Zone are unique and contrast sharply with conditions in other zones.

The effectiveness of the Brooks Range in influencing the climate of the land area to the north has not been definitely established, although the Range is a topographic barrier.

Variations in temperature here are confined to narrower limits than in the Interior Basin. Extremely low temperatures in this zone range between —45° and —60° F. Seldom do maximum temperatures reach 80°F. Even during the prolonged period of continual daylight, the sun's rays reach the earth's surface at such low angles that they cause little surface warming.

Mean hourly windspeeds in summer average from 11 to 15 miles per hour. Maximum summertime windspeed has reached 52 miles per hour at Point Barrow.

Average annual precipitation for this zone is from 5 to 10 inches, although 16 inches occurs near Cape Lisburne. Annual snowfall totals average about 50 inches east of Cape Lisburne and from the Arctic Coast to the Brooks Range. Kotzebue experiences the warmest average temperatures and consequently receives a smaller ratio of snowfall to total precipitation than the remaining portion of the zone. The low moisture-carrying capacity of the colder air that prevails over the area accounts for this zone's having such light precipitation.

The average freeze-free period contrasts with that in other zones; it ranges from 65 days in the Shungnak area to just short of 90 days at Kotzebue. The coastal area north of the Brooks Range has minimum readings averaging near or below freezing for all months of the year; vegetal growth is limited to those species that can endure the vicissitudes of this rigorous climate.

WEATHER FACTORS THAT AFFECT FIRE BEHAVIOR AND CONTROL

Weather conditions are highly important to ignition and spread of wildfire. The amount and frequency of precipitation, air temperature, air moisture, and air movement combine to produce the dryness and consequently the flammability of fuels. Other atmospheric conditions also strongly influence behavior of a going fire. For example, a thunderstorm not only starts lightning fires, but its presence may often cause erratic winds that blow the fire out of control.

To interpret the normal weather patterns at various places and at different times of day, month, and year, weather records from 18 stations have been analyzed for the period 1950-58.[4] Observations taken from these 18 stations sample the climates experienced in their respective climatic zones (fig. 20). The individual stations are widely separated and only represent the heterogeneity of climes experienced in the State. The recorded data show the normal conditions that can be expected; however, local or temporary weather situations are often abnormally worse.

PRECIPITATION

Precipitation varies widely throughout the State, but generally decreases from south to north (figs. 26 and 27). Successive east-west mountain ranges prevent moist maritime air from reaching interior regions.

Great variation in summer rainfall is indicated by the records at representative weather stations in the Interior Basin, West Central, and Cook Inlet climatic divisions. (See table 1 and figs. 21 through 25).

The combination of time of year with amount of precipitation that falls then is an important factor influencing fire behavior. The length of time between summer rains has an important bearing on the amount of growth and the degree of curing in the herbaceous species; duration of these periods likewise affects the moisture content of dead material. Long periods of dry weather hasten the curing date of herbaceous vegetation, and thus extend the period of high flammability.

Table 2 indicates distribution of rainfall among the 4 summer months and the ratio of this season's precipitation to the annual total.

[4]Summary of the analyses appears in the appendix and is highlighted in this chapter.

Table 1. — **Variation in summer precipitation**

Weather station	Month								
	May			June			July		
	Normal	Max.	Min.	Normal	Max.	Min.	Normal	Max.	Min.
Anchorage (Cook Inlet)	0.51	2.00	0.02	0.89	2.94	0.03	1.55	3.25	0.19
Bethel (West Central)	.89	2.50	.02	1.20	2.48	.30	2.29	3.95	.49
Fairbanks (Interior Basin)	.74	1.75	.07	1.37	3.52	.21	1.92	4.24	.40
McGrath (Interior Basin)	.94	1.98	.34	2.06	4.36	.42	2.32	4.73	.76

Growing conditions early in the season depend upon fall and winter moisture because too little precipitation falls early enough in the spring to promote plant growth. A deficiency of winter precipitation or early loss of snowpack may indicate the possibility of early periods of high flammability; in addition, this set of circumstances can cause deeper than normal drying of ground fuels which so often means a greater than usual resistance to control of fires. For most reporting stations, the monthly precipitation increases during the summer. Less than 20 percent of the normal annual precipitation falls between April and June. Only a few interior stations report more than 35 percent of their annual precipitation during the period generally considered the growing season.

The amount of moisture that falls in any single storm period is important to fire control. The frequency of moisture occurrence affects the flammability of the vegetative materials and the rate of buildup of fire season severity. Rainfall intensities greater than 0.25 inch in any one day occur but seldom (table 3). Virtually no precipitation falls on three-fourths of the days in May. At very few stations did more than 0.26 inch of precipitation occur on one or more days during May. During April, the weather is even drier. In May and June both frequency and intensity of rainfall gradually increase.

Table 2.—**Percent of normal annual precipitation, April through July (Av. 1950-58)**

Weather station	Month				Seasonal percent of annual	Annual ppt.
	April	May	June	July		
						Inches
Anchorage	2.8	3.6	6.2	10.9	23.5	14.27
Bethel	3.0	4.9	6.5	12.6	27.0	18.17
Fairbanks	2.4	6.2	11.5	16.1	36.2	11.92
Fort Yukon	2.6	4.9	10.9	14.8	33.2	6.52
Galena	1.3	4.3	11.6	18.6	35.8	14.55
McGrath	2.6	4.9	10.8	12.1	30.4	19.13
Northway	3.1	6.3	17.6	25.6	52.6	11.34

Table 3.—**Rainfall intensity classes by number of days per month (Av. 1950-58)**

Weather station	May				June				July			
	Normal ppt.	0.0-trace	0.01-0.25	0.26+	Normal ppt.	0.0-trace	0.01-0.25	0.26+	Normal ppt.	0.0-trace	0.01-0.25	0.26+
Anchorage	0.51	26.6	4.0	0.3	0.89	21.3	7.9	0.8	1.55	18.9	9.4	2.7
Bethel	.89	18.6	9.6	.8	1.20	18.1	10.8	1.1	2.29	15.5	13.0	2.4
Fairbanks	.74	25.2	5.3	.5	1.37	20.7	7.8	1.5	1.92	16.3	8.6	2.1
Fort Yukon	.32	28.0	2.8	.2	.71	23.8	5.7	.5	.96	25.3	5.4	.3
Galena	.63	24.5	6.1	.4	1.69	21.4	7.7	.9	2.69	19.4	9.4	2.2
McGrath	.94	23.8	6.5	.7	2.06	19.6	9.1	1.3	2.32	17.8	9.8	3.4
Northway	.72	23.0	6.9	1.1	2.00	19.5	8.7	1.8	2.89	18.4	10.6	2.0

Fort Yukon receives slightly less than 2 inches of rainfall during the May-July period; 77 days are rain free, and more than one-fourth inch will fall on only 1 day during the 3 months.

TEMPERATURE

Observation and knowledge of air temperature are important in studying fire behavior. Their main value lies in the relation between temperature and its effects on equilibrium moisture content and on ambient air stability conditions. Fuel temperature is affected by solar radiation and the surrounding air mass. Both exposure and arrangement of fuel particles bear on the actual temperature the fuel attains. Air temperature also affects the rate of moisture loss following a period of wetting by rain or dew.

Temperatures are higher in the Interior Basin than in any other zone. Nowhere do they stay above 80° F. for extended periods (table 4), but the sustained level over a period of 18 hours decidedly affects fuel moisture and fuel temperature.

Table 4.—**Average daily air temperature classes (degrees F.) by number of days in each temperature class per month (Av. 1950-58)**

Weather station	June						July					
	30-39	40-49	50-59	60-69	70-79	80-89	30-39	40-49	50-59	60-69	70-79	80-89
Anchorage	0.1	5.2	15.9	7.5	1.2	0.1	0	1.3	14.9	12.1	2.6	0.1
Bethel	.9	9.8	12.4	5.8	1.1	0	0	4.7	16.8	7.6	1.8	.1
Fairbanks	.2	2.3	8.9	11.3	6.1	1.2	0	1.6	9.0	11.6	7.0	1.8
Fort Yukon	.3	3.0	8.6	11.4	6.3	.4	.2	1.4	7.1	12.3	8.4	1.6
Galena	.2	3.2	11.4	10.6	4.1	.5	0	1.4	11.9	11.3	5.4	1.0
McGrath	.5	4.3	11.3	9.9	3.5	.5	.1	2.8	13.0	9.8	4.2	1.1
Northway	.3	5.2	10.5	10.2	3.5	.3	.1	3.2	10.9	10.8	5.3	.7

Afternoon temperature affects the plans for control of fires. As the long day progresses, fuel moistures reach or approach equilibrium moisture content. This in turn increases flammability. More days have higher afternoon temperatures at Fairbanks than at Anchorage (table 5). This fact may be directly related to the greater fire problem in the Fairbanks area.

Table 5.—**3:00 p.m. temperature classes (degrees F.) by number of days per month (Av. 1950-58)**

Weather station	Month					
	June			July		
	30-49	50-69	70-89	30-49	50-69	70-89
Anchorage	1.0	25.7	3.3	0	24.7	6.3
Fairbanks	0	16.1	13.9	0	15.0	16.0

PERMAFROST

Permafrost consists of organic and soil material that remains frozen year round. Regional climatic differences result in variation of permafrost thickness from more than 1,000 feet in northern Alaska to permafrost-free terrain in southen Alaska (fig. 28). Precipitation (through ground water), temperature, and insulation material affect the presence and depth of permafrost. Permafrost, in return, somewhat influences local temperature and considerably influences the supply of usable ground water.

Because of their active water movement, streams generally are underlain by deeper and wider unfrozen areas than are lakes; coarse, permeable sand or gravel is more likely to be free of permafrost than is impermeable silt. Abundant unfrozen zones at shallow depth can be expected in mountainous areas, especially on south slopes. The most favorable sites for formation or preservation of permafrost in mountain areas are on north slopes and beneath poorly drained surfaces on broad interfluves and valley bottoms (Hopkins, et al. 1955). Table 33 shows the time of season by which the ground is thawed to various depths.

Permafrost affects vegetation in several ways that bear on fire behavior and consequences. The cold soil above the permafrost layer inhibits growth and delays the "greening-up" of plants in the spring to the extent that much dry material is available for burning early in the fire season. Roots tend to grow laterally and above the frozen layer. When fire passes through a stand of timber and consumes the organic mantle, tree roots have nothing left to cling to; thereafter, even light winds can blow down large areas of trees that otherwise would have survived the fire.

The presence of permafrost often misleads firefighters. Frozen organic matter thaws and dries out when a fireline trench exposes it to open air; this permits a smoldering fire to escape across the once safe zone.

RELATIVE HUMIDITY

Air moisture is generally thought of in terms of relative humidity. In Interior Alaska, humidities in May and June are lower than in July, and considerably lower than in August (tables 6 and 25). This situation is the reverse of what is usual in most of the western United States.

Air moisture affects burning conditions mainly by varying the fuel moisture content. Most fine fuels are sensitive to changes in air moisture and follow the humidity pattern rather closely. In heavier fuels, moisture content changes more slowly since a much smaller percentage of the total volume is exposed for rapid transfer of moisture.

LENGTH OF DAYLIGHT

Both air and fuels receive heat by solar radiation. The prolonged hours of daylight and sunshine contribute to maintaining fairly high temperatures. Lengthening or shortening of daylight at a given latitude follows the change in the meridian angle of the sun. Surface temperatures are higher in the summer than in the winter not only because the sun shines longer, but because it shines more directly, and therefore, more intensely on the earth's surface. This potential worsening of fire-weather conditions is somewhat balanced by the fact that the amount of radiant energy received on any surface area decreases as we move from tropical to northern latitudes because of the lowering angle of incidence of solar radiation.

Table 6.—**3:00 p.m. relative humidity classes (in percent) by number of days per month (Av. 1950-58)**

Weather station	Month								
	May			June			July		
	<30	30-49	50+	<30	30-49	50+	<30	30-49	50+
Anchorage	1.1	16.9	13.0	0.6	10.0	19.4	0.2	6.2	24.6
Bethel	.3	6.6	24.1	.4	6.0	23.6	0	4.4	26.6
Fairbanks	6.7	17.6	6.6	5.1	16.0	8.9	3.5	12.3	15.2
Fort Yukon	1.3	16.9	12.8	1.0	18.7	10.3	.7	15.6	14.7
Galena	3.3	13.9	13.8	3.2	12.9	13.8	1.2	12.3	17.5
McGrath	2.6	16.9	11.5	2.9	13.8	13.3	1.0	11.1	18.9
Northway	5.2	15.0	10.8	5.2	15.9	11.7	2.2	15.1	13.7

Table 7 compares the number of hours of daylight for stations at three latitudes: Fort Yukon (lat. 66°35'N.), Anchorage (lat. 61°10'N.), and Missoula, Montana (lat. 46°55'N.).

Table 7.—**Duration of daylight**

Date	Location					
	Fort Yukon		Anchorage		Missoula	
	Hrs.	Min.	Hrs.	Min.	Hrs.	Min.
May 1	17	30	16	11	14	25
11	18	52	17	06	14	53
21	20	22	17	57	15	18
June 1	22	19	18	43	15	38
11	24	00	19	13	15	50
21	24	00	19	25	15	53
July 1	24	00	19	15	15	51
11	22	18	18	47	15	38
21	20	31	18	06	15	19

The length of day or duration of possible sunshine is much greater at higher latitudes — a maximum of 5 hours greater at Fort Yukon than at Missoula, Montana. Missoula, however, receives more intense heating because the sun's rays are more nearly perpendicular to the earth's surface when the sun is at its zenith. This in turn often dries out fuels more than does the longer period of lower maximum temperatures farther north.

WIND

Wind influences the behavior of a fire. High windspeed may cause a fire to jump barriers and travel in the crowns of trees, or to spot ahead of the main fire front. Wind combined with topography can cause erratic and violent fire behavior.

As should be expected, afternoon winds usually are stronger than morning winds. Weather records indicate that Bethel is windier than most places, as the 0 to 7 miles-per-hour speed appears on very few days, but the 8 to 12 and 13 to 18 miles-per-hour range is high for morning readings and at least average for afternoon readings. Fort Yukon follows the same general trend. In May, many stations record the 13 to 18 miles-per-hour range on more days than in June or July (table 8); this indicates that winds influence fire behavior more in May than in other months.

Many factors influence the direction of airflow at any specific place. Geographic location determines whether maritime or continental airflow affects a given area. Topography can curtail, accentuate, or change the surface direction of a prevailing wind. Winds of unusually high velocity that blow out of mountain canyons are generally associated with glaciers lying in these

Table 8.—**9:00 a.m. and 3:00 p.m. wind velocity classes (in miles per hour) by number of days per month (Av. 1950-58)**

Weather station	Wind velocity classes, miles per hour: 0-7		8-12		13-18		19-24		25+	
	9 AM	3 PM	9 AM	3 PM	9 AM	3 PM	9 AM	3 PM	9 AM	3 PM
May										
Anchorage	19.2	7.0	8.1	13.6	3.1	7.7	0.6	1.6	0.1	0.1
Bethel	9.5	4.5	12.0	13.2	7.8	10.8	1.6	2.3	.1	.2
Fairbanks	20.3	13.9	7.1	10.0	3.3	6.1	.3	.9	0	.1
Ft. Yukon	9.8	7.8	11.7	13.4	7.9	8.1	1.6	1.3	0	.4
Galena	13.4	10.5	11.1	11.4	5.8	7.3	.7	1.6	0	.2
McGrath	20.0	13.1	9.2	12.9	1.8	4.6	0	.2	0	.2
Northway	15.4	11.1	11.8	12.3	3.7	7.2	.1	.4	0	0
June										
Anchorage	20.3	11.6	8.0	12.4	1.6	4.6	.1	1.4	0	0
Bethel	8.1	7.2	14.5	13.4	6.6	8.6	.7	.8	.1	0
Fairbanks	19.7	13.3	6.7	10.5	3.1	5.1	.4	1.0	.1	.1
Ft. Yukon	12.6	7.8	9.2	13.7	6.7	6.3	1.4	1.8	.1	.4
Galena	15.2	11.6	8.8	10.8	4.9	5.7	.8	1.6	.3	.3
McGrath	20.2	15.7	7.2	9.2	2.6	4.8	0	.3	0	0
Northway	15.3	10.0	10.2	13.1	3.9	6.3	.6	.7	0	0
July										
Anchorage	21.9	15.6	7.7	11.0	1.3	3.7	.1	.7	0	0
Bethel	12.0	8.5	11.8	12.6	6.2	8.2	.9	1.6	.1	.1
Fairbanks	23.3	15.7	6.3	10.5	1.3	4.6	.1	.2	0	0
Ft. Yukon	14.8	9.6	9.3	12.2	5.4	6.8	1.4	2.1	.1	.3
Galena	18.2	14.0	6.6	9.5	4.9	4.8	.9	2.2	.4	.5
McGrath	22.8	16.8	6.3	10.8	1.9	3.2	0	.2	0	0
Northway	17.9	14.8	9.4	11.2	3.6	4.6	.1	.4	0	0

canyons. Taku winds, Knik winds, Delta River winds, and Summit winds are well-known examples of this phenomenon. Occurrence of such winds can usually be predicted by alert forecasters. Table 9 shows the variations between reporting stations on the frequency of changes in wind direction during the month. Of interest is the shifting from month to month of predominant wind direction at the same location. These observations can be valuable in long-range fire control planning. The extremely small number of samples recorded below presents the probability that even though two reporting stations have similar characteristics the intervening area may vary greatly from them.

SKY CONDITIONS

Sky conditions have a multiple influence on behavior and control of forest fires. Some general knowledge of what to expect in various places and at different times of the season is important to a fire control officer. Appendix tables 29 through 32 summarize in detail the available information on the amount of cloud cover, types of weather (predominant moisture forms), visibility distances, and ceiling heights.

The amount or extent of cloud cover and the prevalent weather type greatly affect fire behavior and the flammability of fuels. Increased density of clouds and smoke reduces the penetration of sun rays, and allows only a portion of their heat concentration to reach the earth's surface. It also reduces the radiational heat escaping from the earth's surface. The combined effect reduces the diurnal temperature fluctuation. Rapid changes of surface temperature resulting from intermittent shading by clouds may cause troublesome changes in wind direction and velocity. On one-half to two-thirds of the days during the fire season, three-fourths of the sky is covered by some type of clouds. This is equal-

Table 9.—**3:00 p.m. wind direction classes by number of days per month (Av. 1950-58)**

Weather station	Wind direction N	NE	E	SE	S	SW	W	NW	Calm
					May				
Anchorage	1.6	0.8	0.7	4.9	9.0	2.2	6.6	4.9	0.3
Bethel	3.9	1.6	4.5	3.6	6.1	2.0	2.1	6.6	.6
Fairbanks	2.6	4.4	3.9	2.7	4.1	5.5	3.8	2.8	1.2
Fort Yukon	1.1	14.0	2.0	1.7	1.1	5.7	4.4	1.0	.0
Galena	7.3	2.8	5.6	1.8	3.7	3.4	2.1	2.0	2.3
McGrath	4.7	2.7	5.4	1.6	4.4	4.6	3.2	4.0	.4
Northway	3.0	.7	2.6	2.7	2.7	3.7	4.2	9.8	1.6
					June				
Anchorage	2.6	0.4	0.1	2.4	5.8	3.2	9.0	6.3	0.2
Bethel	2.6	2.1	2.3	2.3	7.0	4.7	2.7	5.9	.4
Fairbanks	1.7	2.8	1.9	1.6	3.3	7.7	6.3	2.7	2.0
Fort Yukon	1.2	8.3	1.0	1.0	1.6	7.0	8.3	1.6	.0
Galena	3.2	1.3	2.6	1.9	2.7	7.8	3.2	4.1	3.2
McGrath	3.7	2.7	3.1	.9	6.7	5.1	3.3	3.2	1.3
Northway	3.9	1.2	1.4	2.4	2.1	2.4	7.1	8.2	1.3
					July				
Anchorage[1]	3.3	1.0	0.2	2.1	3.0	3.8	8.7	7.4	0.8
Bethel	2.4	2.1	1.7	1.6	9.5	5.2	3.0	5.2	.3
Fairbanks[1]	1.3	2.1	1.4	2.2	3.6	6.0	8.6	2.4	2.0
Fort Yukon	.8	5.1	1.1	1.2	2.1	8.7	9.7	2.2	.1
Galena	2.2	.8	1.5	1.2	4.1	7.5	4.0	3.8	5.9
McGrath	2.6	1.7	1.6	2.8	8.9	5.6	3.4	3.1	1.3
Northway	3.0	1.8	2.4	2.1	1.8	2.8	4.8	10.1	2.2

[1]Six days' records missing.

ly true for inland and coastal areas. The amount or extent of cover gradually increases from April through August.

The interior of Alaska experiences few days during May through July when the ceiling is lower than 1,000 feet. More often the ceiling height is greater than 10,000 feet. During August, when there is more rainfall, the ceiling is lower and visibility is materially reduced.

Both smoke and haze affect surface weather somewhat but not nearly as much as they affect fire control activities. Reduced visibility makes fire detection more difficult. Most interior stations report some visibility reduction in June due to smoke haze; the effect is greater after July 1.

Thunderstorms present a double danger. First, they cause lightning fires. Second, the presence of a fully developed cell may cause high velocity downdraft winds that often make fires behave erratically and burn out of control in almost any direction. Available thunderstorm data were inadequate for useful analysis, since routine weather records indicate only thunder that is actually heard by the observer, and thus encompasses an area with a radius of a very few miles.

SIGNIFICANCE OF DEVIATIONS FROM NORMAL

The preceding discussion shows what is considered the normal expectancy for local climatic conditions. A firm knowledge of the normal situation is vital to intelligent planning and strategy for fire control. Knowledge of deviations from the normal is also extremely important. If the strength of the attack organization is to be based on average bad conditions, then the extent of variation of present conditions from the normal must be known within some given limit of accuracy. It is not logical to build up a fire control force strong enough to handle the worst season; neither is it logical to build one only strong enough to handle a normal season.

Weather conditions during two recent fire seasons — 1950 and 1957 — are considered critical. Deficient precipitation, stronger-than-average winds, low levels of air moisture, and abundance of dry lightning storms all increased the incidence and affected the behavior of fires. This buildup in fire load, of course, very soon taxed beyond breaking point the ability of the fire control forces to cope with the immediate fire situation.

1950.—The year 1950 was one of the driest recorded. Precipitation was below normal over the entire Interior. The lowest annual precipitation measured in Alaska that year (at Fort Yukon) was 3.83 inches, about 55 percent of normal. Large forest fires in that area occurred from early spring until fall. More than 2 million acres of forest land were burned by 224 fires that summer. This was one of the worst fire seasons experienced since the beginning of organized protection in the State. (In the first years of organized firefighting, 1940 and 1941, 4.5 and 3.6 million acres, respectively, were burned; records for these years are sketchy.)

Many new weather and fire records were established in 1950. Stations over most of the State reported above normal temperatures for March and April. Drought persisted in the Yukon and southern valley regions from January through September. A forest fire between the Chandalar and Porcupine Rivers in the Fort Yukon area burned 246,000 acres in the month of June; if spread over the whole month this would mean burning more than 13 square miles each day.

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Figure 29. — High velocity down-canyon winds are often associated with glaciers. Matanuska Glacier.

The many dry thunderstorms from June through August caused a serious outbreak of fires each month in both the Yukon and southern valley regions; temperatures remained above normal at many stations in these regions. Some relief from the drought came in October, yet precipitation reported by many stations was still below normal.

1957.—As the 1957 season progressed, weather conditions approached the critical point. April's maximum temperatures climbed to new records at many stations. Above-normal readings continued through May; record highs were reached in the Kenai Peninsula. June temperatures were the highest ever in a wide belt extending from the northern Arctic Coast through the central mainland on to the Alaskan Peninsula.

Temperatures dropped to near normal over most of the State during July, but rose to abnormally high levels again in August. Warming trends continued at most points into September; Fairbanks registered a record high of 84° F.

As a rule, above-normal temperatures indicate airflow associated with above-normal precipitation. However, this year vast areas of the State experienced temperatures well above normal but received relatively light precipitation. The driest area was in Alaska's interior, where the precipitation total remained consistently below normal month after month.

Tanana Valley experienced the most persistent drought on record during the growing season; total precipitation from February through May totaled less than 50 percent of normal. The only other growing season with comparable deficiencies was 1950. A slight break came about June 20, but the month's total was only 40 percent of normal. The drought continued through August and September; precipitation was only about 20 percent of normal in the Fairbanks area.

More than 5 million acres burned this year, a total far exceeding that of any other year of record; this was 2½ times the area burned in 1950.

Comments.—On all forest and range lands the severe fire seasons are usually the years of more critical weather. Fire-weather and fire-danger rating records show this relation well. Years with dry springs followed by dry summers almost always have many large fires. Alaska is no different from other States in that respect. Observation of weather patterns and associated fire history reveals that in Alaska the weather does not always get hot and dry and stay that way as some may think. Further research and analysis will help produce guides whereby build-up of critical fire seasons can be more easily recognized; of importance too, use of such guides will assist prediction of conditions which are not critical.

CHAPTER 4

FUELS

In forest fire language, "fuel" refers to any material that may burn if it is ignited — grass, needles, tree trunks, logs, muskeg, peat, or even coal. It may be either dead or living. Fuel is thought of in two ways: (1) as represented by species or species groups (cover or timber type), or (2) as represented by fuel types. Within a *cover* type, e.g., white spruce-paper birch, fire behavior is estimated according to how fast it travels and how easily it can be controlled in an average stand. A *fuel* type occupies an area in which the vegetative material is classified according to how fast fire will spread in it and how easily the fire can be controlled, regardless of the cover type. Fire control men prefer to use the *fuel* type classification system as it is both more precise and more flexible.

To date, no fuel type classification system has been established for Alaska. The cover type classifications used and the relation of each type to fire are described in this chapter.

FUEL DESCRIPTION

SIZE

The initial advance of any forest fire is usually through such fine fuels as grass, moss, or dry leaves. Heavy fuels, such as down logs, may slow the advance of a fire by being a barrier between the flame and the fine fuels ahead of it. Moisture content of large fuels does not fluctuate with temperature and humidity as fast as that of fine fuels. In general, the ratio of surface area to volume determines how rapidly the moisture content of a fuel fluctuates with the change in such weather factors as temperature and humidity. This ratio is much higher in a blade of grass than in a limb or a log.

Mosses, lichens, and grass, in combination or separately, are found throughout the vegetal range of Alaska. "Moss" is a loosely used term; as a general term it includes many species of lichens, which are at least as fine as the moss species and probably more flammable. Moss grows nearly everywhere that any vegetation grows, and is an extremely finely divided fuel. A slight rise in temperature, a decrease in relative humidity, and a spark are all that are needed to ignite it. The influence of heat radiation is similarly more rapid on ignition of moss than on other fuels.

The prevailing fuel types through which an initial fire front advances in Alaska may be made up of finer fuel particles and these may have a higher rate-of-spread classification than an average fuel type in most other States.

CONTINUITY

Within the vegetative zone, Alaska has a nearly continuous expanse of ground fuels. Mosses, grasses, and lichens are found in some combination everywhere except on rivers, lakes, or barren areas. In most other localities in the United States, horizontal continuity is broken by such factors as bare soil under brush stands, roads, or cultivated lands. Needles under a well-pruned timber stand support a much slower rate of spread than does moss.

Crown fires in Alaska are not unusual; the nature of the timber stands presents an excellent opportunity for crowning to occur. Cover type descriptions point out the fact that the climax spruce stands, both white and black, are typically close-grown with branches drooping to the ground. The branches often support a heavy growth of beard lichens, which adds greatly to the amount of fine fuel that carries fire upward. These conditions complete the pattern of complete horizontal and vertical continuity simultaneously. In other words, if a fire gets under a stand of spruce timber, the chances are excellent that it will climb the tree, and, if much wind is present, will spread from tree to tree through the crowns.

This situation is intensified by the fact that spruce needles easily become detached when heated and ignited, and float ahead to accelerate the already rapid spread. In a spruce-birch stand, the highly flammable birch bark further intensifies the tendency for a fire to spread rapidly through the crowns; decadent and overmature birch trees are particularly dangerous.

COVER TYPE CLASSIFICATION

The following descriptions of cover types closely follow those of Lutz (1956), but the relation between the cover type and actual fire behavior within the type is derived primarily from Robinson.

EARLY STAGES IN FOREST SUCCESSION

Paper birch (*Betula papyrifera*). — This species generally forms even-aged stands. Within 80 years white spruce often becomes prominent as an understory component. By 120 years the spruce begins to dominate the stand. Barring major disturbances, the stand eventually becomes a white spruce-paper birch forest. Fire tends to perpetuate the birch but reduce the spruce. Birch is typically found over millions of acres as codominant with spruce. The birch tends to open up and have fairly heavy ground cover. Birch stands seldom sustain fire unless some spruce is in mixture with it. Once started, however, fires burn readily in stands containing birch because of the oily, highly flammable bark, which permits flames to race up the trees into the crowns and send sparks and chunks of bark ahead.

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Figure 30. — Lichens promote crowning.

Quaking aspen (*Populus tremuloides*). — The history of an aspen stand is very similar to that of paper birch. On excessively dry south and west slopes, aspen may persist indefinitely. Aspen is relatively short lived, living from 80 to 100 years; it serves primarily as a nurse crop for white spruce. Aspen is seldom found in any extensive areas as codominant with spruce. It tends to have a shallow, clean ground cover, and prunes itself quite rapidly. For this reason, aspen stands are typically more fire resistant than other types.

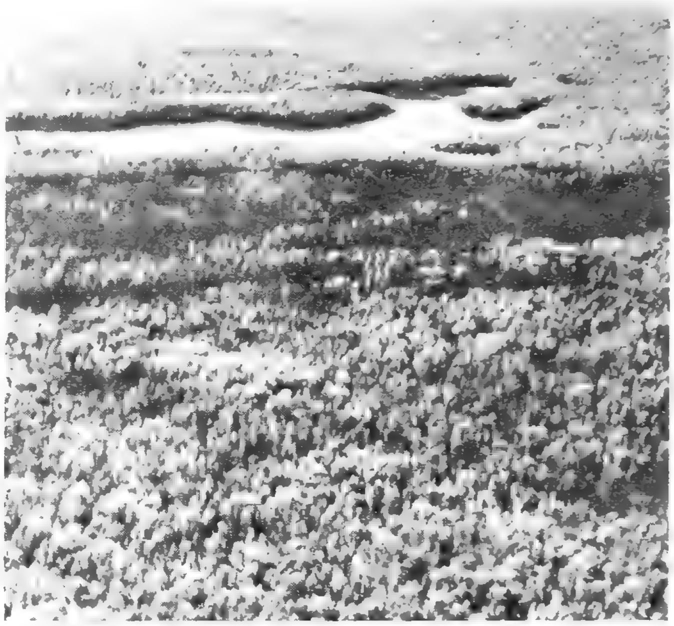

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Figure 31. — Horizontal continuity of fuel.

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Figure 32. — Vertical continuity of fuel.

Balsam poplar (*Populus balsamifera*). — This species forms essentially pure stands on recently deposited alluvium. (Northern black cottonwood is considered a part of this general type.) Following fires, balsam poplar may invade upland areas beside large streams. It may occupy flood plains indefinitely if they frequently receive new deposits of silt. However, on stable sites white spruce gradually gains dominance. As small trees the poplars are subject to fire damage, but above 30 feet in height they become well pruned and are progressively less susceptible to fire damage; as a bottomland type it does not comprise a true fire hazard.

Willow-alder (*Salix* spp.-*Alnus* spp.). — Such a complex is not necessarily related to the early stages of succession, but it is included with the other hardwood stands. Willow is found along banks of rivers and intermittent streams and extends to the treeless plains of the Arctic. Alder is found along rivers and at brush lines on mountain slopes. These two species do not tend to carry fire unless extremely dry weather prevails and high winds are blowing. When they do burn, they burn hot and thus increase the resistance to control.

SECONDARY STAGES IN FOREST SUCCESSION

White spruce-paper birch (*Picea glauca-Betula papyrifera.*). — This type is more advanced than either the paper birch or quaking aspen types. It may develop immediately after fires or it may result from gradual entry of white spruce into an originally paper birch stand. Barring disturbance, a pure relatively open spruce stand will result. Fire tends to perpetuate the birch but reduce the spruce. The horizontal and vertical continuity of fuel, accompanied by the flammable birch bark, causes this type to be very susceptible to high rates of fire advance, both along the ground and into and through the tree crowns.

White spruce-quaking aspen. — Development of this type is analogous to that of the white spruce-paper birch type except that aspen dies out rapidly at about 60 years, while birch will remain for 100 to 130 years. The aspen is reestablished easily after a fire, chiefly because of its capacity to produce root suckers.

CLIMAX FORESTS

White spruce (*Picea glauca*).—White spruce becomes climax on well-drained land. Young stands are usually even-aged, but may become uneven-aged with maturity. White spruce following immediately after a fire tends to be dense, but if it develops as a replacement of aspen, birch, or poplar it is likely to be relatively open. It is probably longer lived than other trees in Interior Alaska; ages up to 300 years are not uncommon. An occasional tree may attain a 28-inch diameter and a height of 90 feet. However, an average-sized tree would be more nearly 14 inches in diameter and 70 to 80 feet in height.

Single, light surface fires do not destroy the stand but create openings for the invasion of hardwood species. Repeated severe fires may cause an area to become essentially treeless, supporting only herbaceous or shrub communities, sometimes developing into an aspen or birch stand. Revegetation following fire is rapid; bare areas are rarely seen. The outstanding effects of fires are that (1) most amounts of existing timber are destroyed and (2) the subclimax types (principally quaking aspen and paper birch) are, at least temporarily, greatly increased at the expense of the white spruce type.

In a white spruce stand the trees have heavy, narrow crowns extending to the ground, except trees in mature stands may often have the lower limbs pruned. On dry slopes and in the higher benchlands, white spruce tends to become an open woodland type of growth, where shorter height, broader crowns, and branches extending to the ground tend to persist through maturity. In open stands grass, dwarf birch, Laborador tea, and sedges are typical, as is a heavy continuous ground cover of moss. In dense stands, moss may be heavy along with needles, branchwood, and species of Vaccinium.

Black spruce (*Picea mariana*).—Black spruce can be termed a physiographic climax. It grows on poorly drained areas in relatively flat valley bottoms, on flat to gently rolling land, and on cold slopes having a northern exposure. It forms pure stands of usually small, slow-growing trees. Permafrost is often found at depths of only 12

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Figure 33. — Ecological succession from aspen to pure white spruce stand: A, aspen stand; B, small spruce understory; C, spruce has become dominant; D, aspen is nearly eliminated.

to 18 inches. Without fire this spruce is self-perpetuating both by layering and seeding. Even after a single intense fire it usually regenerates; but if fires are repeated often, the area may become a treeless community supporting sage-rush-grass, or low shrubs. Reentry of black spruce may then be very slow. The trees are short, small in diameter, and have full-length, narrow crowns. On excessively dry valley bottoms or low benchlands, black spruce tends to grow in extensive areas of dense thicket type stands 20 to 30 feet high, and be so dense that human penetration is impossible. With its typical moss ground cover, a black spruce site is an explosive fire type. Most of the excessive rates of spread recorded on going fires occurred in black spruce stands (ch. 7).

Grass.—Grass, a typical flash fuel, is found throughout Alaska from valley bottom to ridgetops and in unbroken continuity from small patches to single areas of hundreds of square miles. Grasses and sedges are an integral part of all muskeg types. In southwestern Alaska grasslands *Calamagrostis* may be 6 to 8 feet high with a 12- to 15-inch surface accumulation of down grass, or "rough." Fire spread in Alaskan grasses is similar to that elsewhere. Winterkilled grass burns at a flash rate of spread in spring before new growth occurs. In late fall after killing frosts, the spread rate again increases.

Muskeg.—Muskeg denotes a poorly drained site regardless of where it occurs topographically. It carries an association of heavy sphagnum mosses, tussocks of sedges, grass, various heath plants, brush, and black spruce; minor surfaces or better drained ridges within a muskeg may carry birch or white spruce. The term "muskeg" is also used to include swamps or bogs containing hundreds of potholes, sloughs, or lakes. Wherever subsurface drainage is blocked, a muskeg association develops even on moderate slopes and ridgetops. As an ecological term, muskeg is limited generally to peat-forming vegetation in Alaska and northwestern Canada.

Moss found in muskegs may be from several inches to several feet deep carrying recognizable plant structure to those depths (peat does not). The moss and lichen types comprise a specific and difficult fire problem because their flashy

USFS

Figure 34. — Small black spruce stand near Gulkana.

USFS

Figure 35. — Typical grass type on lower Kenai Peninsula.

characteristics contribute to rapid surface spread, and their organic mass requires extensive digging in order to stop or extinguish the deep, slow-burning fires. Drought conditions such as those in 1957 and 1958 may cause extreme dryness of moss ground cover to depths of several feet.

Tundra.—The tundras mark the limit of arborescent vegetation; they consist of black mucky soil with a generally frozen subsoil, but support a dense growth of mosses, lichens, and dwarf turflike herbs and shrubs. The treeless area in the Bering Sea and Arctic littorals is largely covered by tundra.

Peat and muck.—Peat material can be classified as woody, fibrous, or sedimentary; the type depends upon the degree of decomposition and the method of its accumulation. Muck is any peat material, altered by such features as aeration, drainage, or micro-organism action or cultivation that causes so great a decomposition that its original botanical character is no longer evident. These types are not particularly pertinent to fire control except that they may hold smoldering fire for a long time. Quenching a fire in them is extremely difficult because the materials smolder similarly to punk or rotten wood.

FUEL TYPE CLASSIFICATION

Formal fuel type mapping or classification has not been done in Interior Alaska. However, through experience and observation of the manner in which different types of fuels burn under various conditions of slope and aspect, Robinson prepared a preliminary rate-of-spread classification for Alaskan fuel types. Table 10 shows generally the relative speed at which fires ignite and burn in the major fuel types.

USFS

Figure 36. — Tundra type, Steese Highway.

Table 10.—**Rate-of-spread classifications for Alaskan fuel types**[1]

Fuel type	Valley bottom		Benchland		Slopes		Ridgetops
	Wet	Dry	Wet	Dry	Southerly	Northerly	
White spruce or birch-spruce	M	H	H	E	E	H	E
White birch or birch-aspen	M	H	H	E	E	H	E
Black spruce	H	E	H	E-F	E-F	H	H
Aspen	M	M	M	M	H	M	M-H
Cottonwood	L	M	L	M	M	M	
Willow-alder	M	M	M	H	H	M	M
Grass	E	F	F	F	F	F	F
Muskeg	M	H	H	E	F	H	E
Tundra	M	H	H	E	E-F	H	E-F

[1] Rate of spread: L=low, M=medium, H=high, E=extreme, F=flash.

Based on BI of 40: 3 m.p.h. wind; 30 percent relative humidity; severity index 8; today's slat moisture content 6 percent.

CHAPTER 5
FIRE-DANGER RATING

USE OF FIRE-WEATHER INFORMATION

Fire-danger rating techniques have been used widely in National Forests and other protection organizations for more than 20 years. Each general region has developed its own system of integrating into meters or tables the primary factors that influence the start and spread of fires.

Prior to 1956, Interior Alaska had no formal system of fire-danger rating, and thus no basis upon which to build a fire-danger rating system. Fire control officers relied upon their personal judgment and experience to estimate the effect of the fire weather for the current day and for the previous several days on preparedness and suppression activities. The younger men in the expanding fire control organization needed a reliable guide upon which to base their decisions.

The Intermountain fire-danger rating system was introduced in 1956 without any modifications as an interim measure in order (1) to interpret weather information in an orderly fashion for use in fire control work, and (2) to obtain research data during the period of the system's operation for eventual incorporation into a better system, which would be designed in accordance with local conditions (Hardy and Brackebusch 1959).

After using the Intermountain system for 2 years, experienced observers noted that the burning index meter did not react to actual field changes as fast as was necessary. Appalachian slats were then substituted for the half-inch dowels (fig. 38) that comprise the fuel moisture input to the Model 8 meter. This change permitted the burning index to react faster, more in keeping with the rapid changes in the fire-carrying characteristics of the finely divided, high surface-area-to-volume Alaskan fuels.

Information from the Model 8 meter can be used satisfactorily by referring to the rate-of-spread computations shown in table 11 (Barrows 1951; Fahnestock 1951). For Alaskan fuels and burning conditions, however, the perimeter increase figures can be only approximate and relative until data from local research make possible a more reliable revision.

To explain the above statement: fires burned through black spruce stands in Interior Alaska at a rate of 120 to 600 chains per hour when the burning index was between 28 and 37,[5] while in southern Idaho fires burned through cheatgrass stands at a rate of 142 to 248 chains per hour when the burning index was between 78 and 93.[6]

By 1960, 14 fire-weather stations were operating throughout Interior Alaska. No great increase in the number of stations is likely in the near future because of the limited number of personnel available. Reliable observers, located near centers of use, with access to adequate long-distance communications are as necessary as proper locations and well-maintained instruments (Hardy, Syverson, Dieterich 1955).

The following tabulation compares the number of stations and areas involved in Interior Alaska and Region 1 of the U.S. Forest Service.[7]

	Alaska	Region 1, USFS
Number of stations	14	175
Total area involved (acres)	225,000,000	32,000,000
Average area per station (acres)	18,750,000	182,857
Area ratio	1	100

Even with the large number of stations in Region 1, the personnel are continually endeavoring to interpret fire weather from a permanent fire-weather station to specific sites on going

[5]With half-inch sticks, or 33 and 59 with slats.

[6]Traylor, R. E. Processed report of a study of eight fires in southern Idaho, 1959; on file at Northern Forest Fire Laboratory, Missoula, Montana. (Burning index based on half-inch sticks.)

[7]Montana, northern Idaho, northeastern Washington, and northwestern South Dakota.

Table 11.—**Average initial rate of spread[1] according to fuel type, slope steepness, and burning index at site of fire[2]**

Fuel rate of spread type	Slope steepness[3]	Burning index 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
	Percent	Perimeter increase (chains per hour)									
Low	0-10	0	1	1	1	1	2	2	2	3	4
	11-25	0	1	1	1	2	2	3	3	4	6
	26-50	1	1	2	2	3	3	4	4	6	8
	51-75	1	2	3	3	4	5	6	7	9	13
	Over 75	2	3	4	5	6	7	8	10	15	20
Medium	0-10	0	1	1	1	2	2	2	3	4	5
	11-25	1	1	1	2	2	3	3	4	6	7
	26-50	1	2	2	3	3	4	5	6	8	10
	51-75	2	3	3	4	5	6	7	9	13	16
	Over 75	3	4	5	6	8	10	12	15	20	25
High	0-10	0	1	2	3	4	5	6	8	9	12
	11-25	1	1	3	4	6	7	9	11	13	17
	26-50	2	2	4	6	8	10	12	16	18	24
	51-75	3	3	6	9	13	16	19	25	28	38
	Over 75	4	5	10	15	20	25	30	40	45	60
Extreme	0-10	1	3	4	5	6	8	10	13	16	19
	11-25	1	4	6	7	9	11	14	19	22	27
	26-50	2	6	8	10	12	16	20	26	32	38
	51-75	3	9	13	16	19	25	32	41	50	60
	Over 75	5	15	20	25	30	40	50	65	80	95
Flash	0-10	1	5	12	15	19	24	30	37	46	57
	11-25	1	7	17	21	27	34	42	52	65	81
	26-50	2	10	24	30	38	48	60	74	92	114
	51-75	3	16	38	48	60	76	95	117	146	181
	Over 75	5	25	60	75	95	120	150	185	230	285

[1]Average initial rate of spread refers to perimeter increase between discovery of fire and first attack. This rate of spread may be anticipated during the first 4 to 5 hours.

[2]Table based upon study of 2,955 fires in National Forests, R-1, 1936-44. Values for very high and very low burning index have been estimated.

[3]General descriptions used in slope descriptions are: Level, 0-10 percent; Gentle, 11-25 percent; Moderate, 26-50 percent; Steep, 51-75 percent; Very steep, over 75 percent.

fires or prescribed burns (Barrows 1951). It will never be possible to have such an intensive coverage of fire-weather stations in Alaska because of the sparse settlement, lack of permanent personnel, and lower order of resource utilization. However, for purposes not requiring daily measurement, recording weather stations may soon be used to fill in gaps at important locations.

Data collected from the present system of fire-weather stations in Alaska have assisted research personnel in understanding the general fire-weather complex that characterizes Alaska's interior. Fire-weather information presented in this publication was obtained from two sources: fire-weather stations and actual fire data. Use of the system by fire control personnel has enabled them to understand the trend of fire-weather conditions during the summer much better than they could previously. One example of such use is evidenced in table 12, which was devised by fire control officers in Interior Alaska to indicate progressively worsening burning conditions according to cumulative moisture content and current burning index. Such a table facilitates wiser use of equipment and manpower in organizing both fire preparation and fire suppression activities.

Table 12.—**Burning condition classes**

Adjective description	Cumulative 5-day fuel moisture[1]	Severity index	Burning index		Burning condition
			Intermountain[2]	Alaska[1]	
	Percent				Class
Low	85+	0-2	1- 20	1-15	1
Moderate	71-84	3	21- 35	16-25	2
Average	48-70	4-5	36- 50	26-35	3
High	36-47	6	51- 70	36-50	4
Extreme	0-35	7-10	71-100	51+	5

[1]Based on moisture content of Appalachian slats.
[2]Based on moisture content of half-inch dowel sticks.


USFS

Figure 37. — Fire-weather station, Glennallen.


USFS

Figure 38. — Appalachian slats (left) and half-inch dowel sticks (right).

SEASONAL TRENDS IN FIRE WEATHER

Perhaps the reason for the greater-than-expected rate of spread of fire in black spruce is due to the fuel itself; perhaps it is due to the method of determining burning index; or perhaps it is due to a weather-length of day complex. The reader should note that such weather factors as relative humidity, fuel moisture, and air temperature, do not approach the normally expected critical points reached in such States as Montana and Idaho.

The percent of total frequency of each measured fire-weather factor during the 1958 season is shown in figure 39 — relative humidity, wind velocity, fuel moisture (both stick and slat), and the resultant burning indexes. An overall pattern becomes apparent that all factors, except wind, have an increasing percent of occurrences on the severe side of the line according to this order of stations: Anchorage, Fort Yukon, Priest River Experimental Forest, and Fort Howes.

Generally speaking, burning indexes are slightly higher in Interior Alaska in May and June than in July and August. The reverse is true for Montana and northern Idaho (table 13 and fig. 40). Statistics on fire occurrence and burned area follow the same trend as the burning index data (refer to figs. 54 and 55). As a point of interest, the fire season at the other edge of the United States (Arizona and New Mexico) also reaches its peak by mid-July, then begins tapering off.

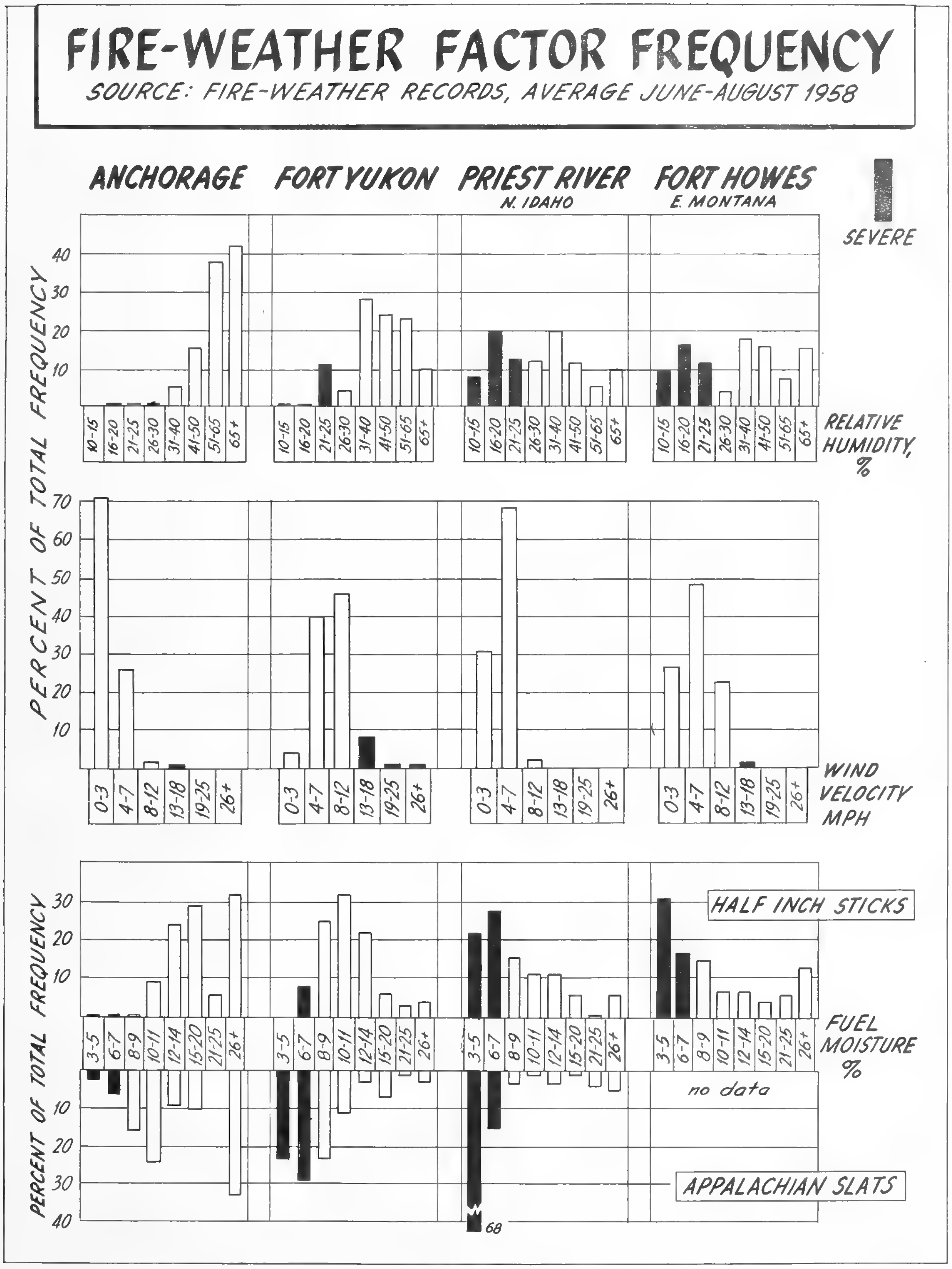
Table 13.—**Percent of total frequency of burning index by general classes, May-August, 1956-58**

Weather station	Indicator	Month								Annual ppt.
		May		June		July		August		
		21-40	40+	21-40	40+	21-40	40+	21-40	40+	Inches
Anchorage	Stick	48	2	0	0	0	0	0	0	16.23
	Slat	60	7	62	0	27	2	42	0	
Fort Yukon	Stick	69	6	62	22	60	13	50	0	5.61
	Slat	39	61	43	49	64	23	75	11	
Priest River	Stick	58	3	46	1	53	30	33	41	39.45
(Idaho)	Slat	0	0	47	26	33	58	27	55	
Fort Howes (Montana)	Stick	39	33	32	22	43	50	19	70	10.47

DIURNAL FLUCTUATION OF FIRE-WEATHER FACTORS

Analysis of fire case histories (ch. 7) revealed some interesting information about involving the diurnal fluctuation of fire-weather factors. The extreme length of daylight in northern latitudes does not cause relative humidity, temperature, or fuel moisture to approach the danger point, as had been supposed previously. Also, the variation of each factor from the most severe observation (usually at 1600) during a 24-hour period is far less than at locations such as Priest River Experimental Forest (fig. 41).

Perhaps extended periods of moderate weather produce comparable conditions in terms of fire behavior as a short number of hours of severe weather (see ch. 3). The flat curves of figure 42 indicate that the extended daylight period in Alaska does not give fuels much time in which to cool off and absorb moisture. They also indicate that the spread of fire can continue night and day at a relatively uniform rate; fire-weather factors at night do not become mild enough for a fire to "lay down" as it usually does in southerly latitudes.



FIRE-WEATHER FACTOR FREQUENCY
SOURCE: FIRE-WEATHER RECORDS, AVERAGE JUNE-AUGUST 1958
ANCHORAGE
FORT YUKON
PRIEST RIVER
N. IDAHO
FORT HOWES
E. MONTANA
SEVERE
PERCENT OF TOTAL FREQUENCY
RELATIVE HUMIDITY, %
10-15
16-20
21-25
26-30
31-40
41-50
51-65
65+
WIND VELOCITY MPH
0-3
4-7
8-12
13-18
19-25
26+
HALF INCH STICKS
FUEL MOISTURE %
3-5
6-7
8-9
10-11
12-14
15-20
21-25
26+
no data
APPALACHIAN SLATS
68

Figure 39

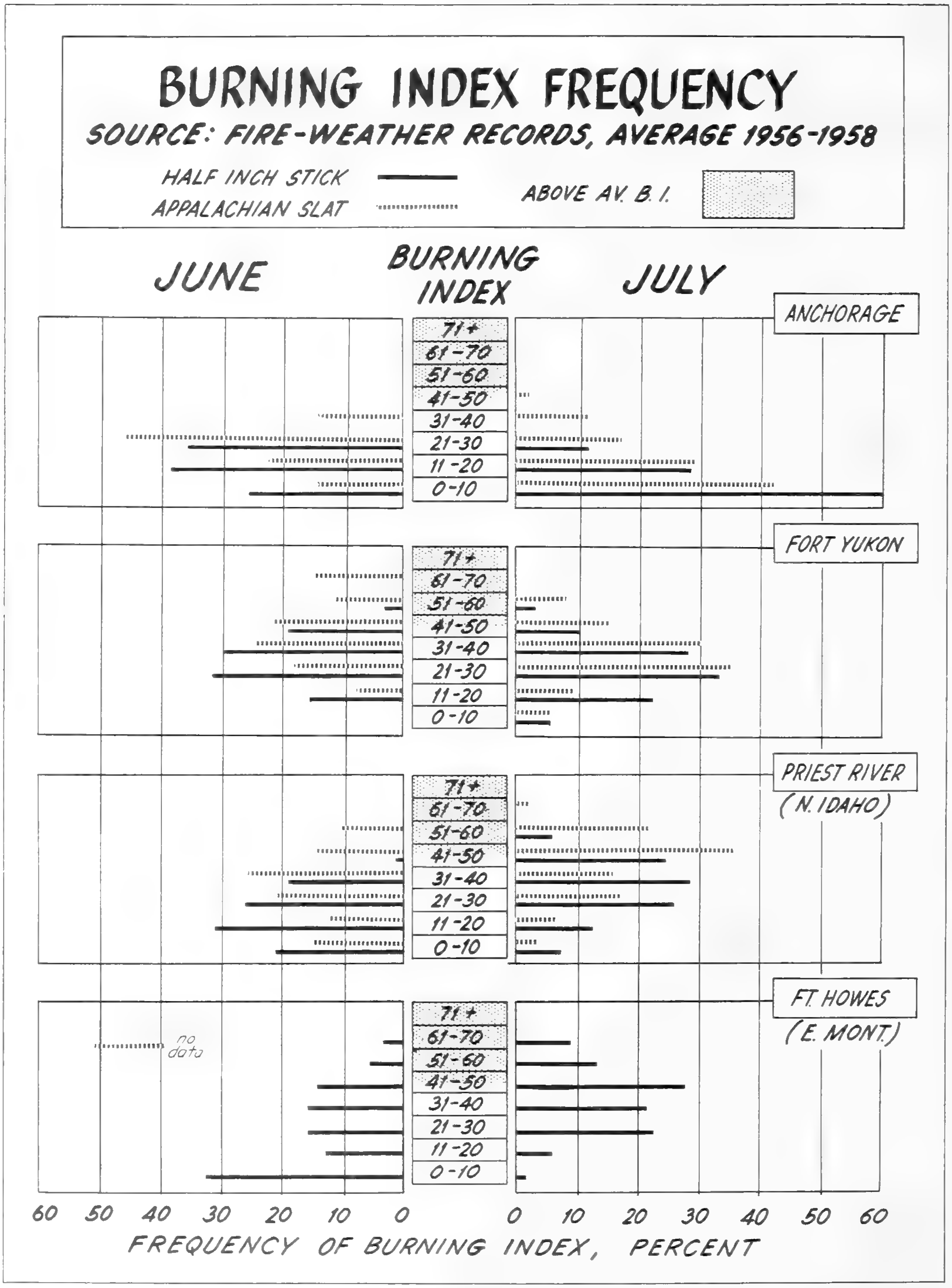

BURNING INDEX FREQUENCY
SOURCE: FIRE-WEATHER RECORDS, AVERAGE 1956-1958
HALF INCH STICK
APPALACHIAN SLAT
ABOVE AV. B. I.
JUNE
BURNING INDEX
JULY
ANCHORAGE
FORT YUKON
PRIEST RIVER (N. IDAHO)
FT. HOWES (E. MONT.)
71+
61-70
51-60
41-50
31-40
21-30
11-20
0-10
no data
60 50 40 30 20 10 0
0 10 20 30 40 50 60
FREQUENCY OF BURNING INDEX, PERCENT

Figure 40

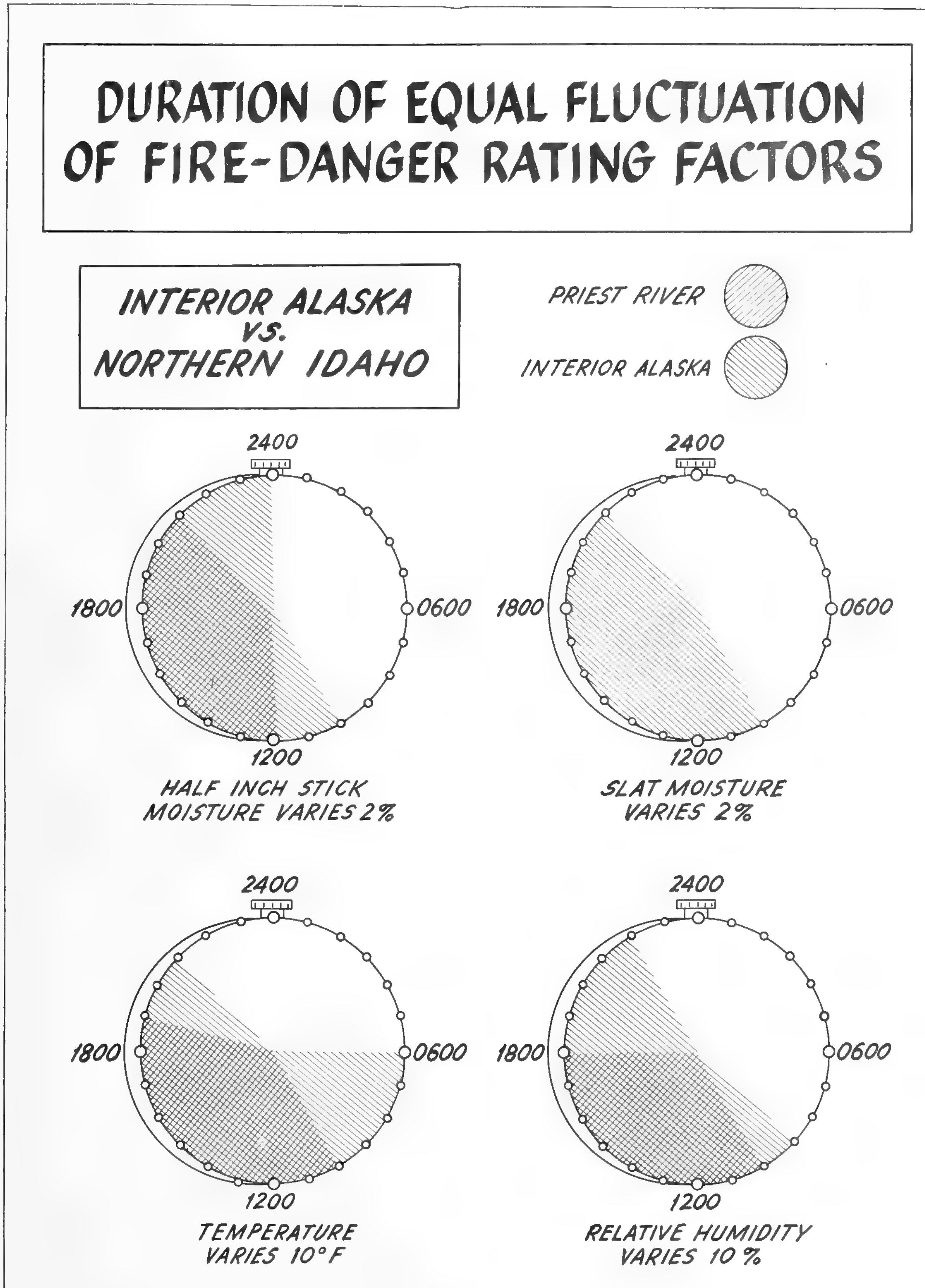

DURATION OF EQUAL FLUCTUATION OF FIRE-DANGER RATING FACTORS
INTERIOR ALASKA VS. NORTHERN IDAHO
PRIEST RIVER
INTERIOR ALASKA
2400
1800
0600
1200
HALF INCH STICK MOISTURE VARIES 2%
2400
1800
0600
1200
SLAT MOISTURE VARIES 2%
2400
1800
0600
1200
TEMPERATURE VARIES 10°F
2400
1800
0600
1200
RELATIVE HUMIDITY VARIES 10 %

Figure 41

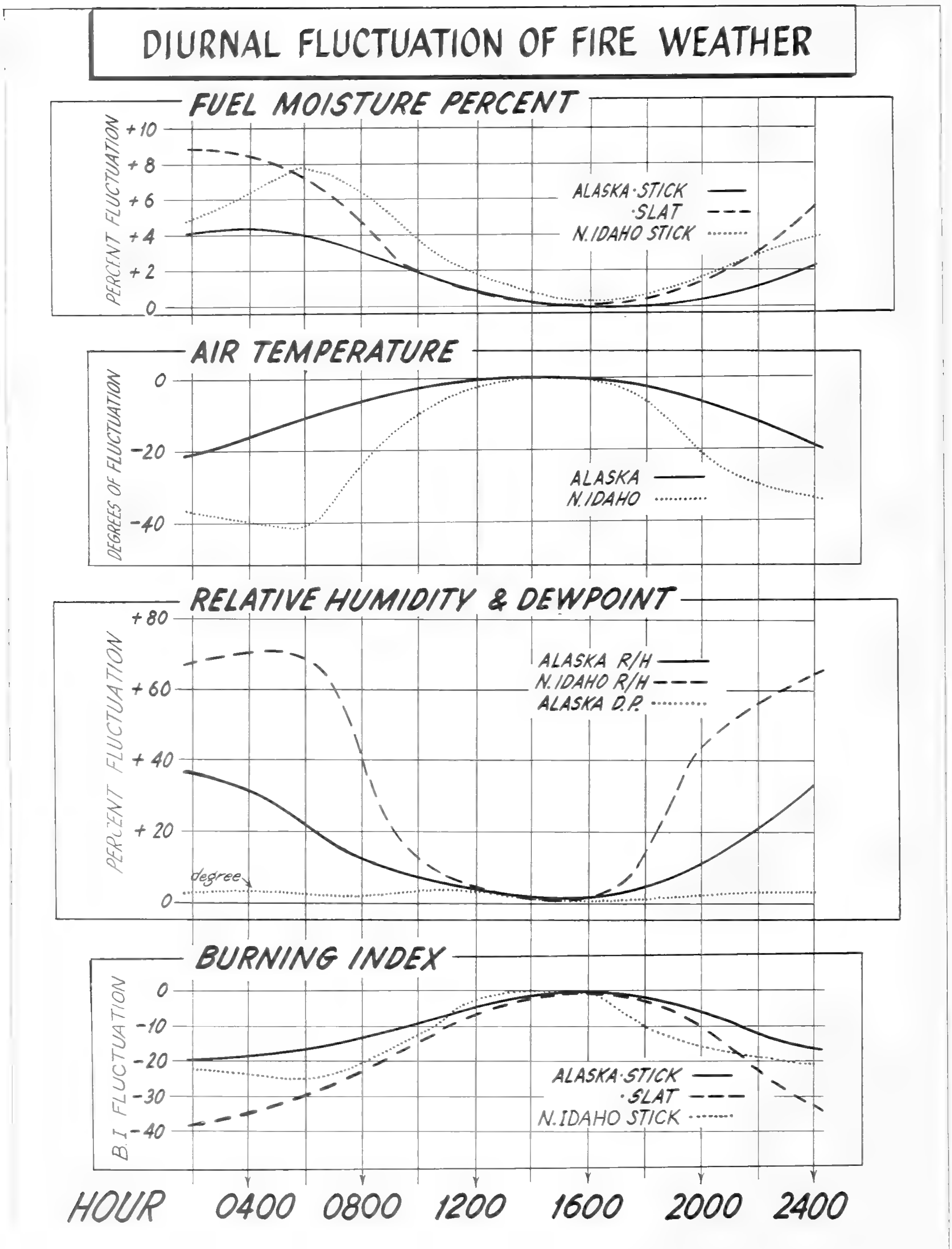

DIURNAL FLUCTUATION OF FIRE WEATHER
FUEL MOISTURE PERCENT
PERCENT FLUCTUATION
+10
+8
+6
+4
+2
0
ALASKA·STICK
·SLAT
N.IDAHO STICK
AIR TEMPERATURE
DEGREES OF FLUCTUATION
0
-20
-40
ALASKA
N.IDAHO
RELATIVE HUMIDITY & DEWPOINT
PERCENT FLUCTUATION
+80
+60
+40
+20
0
degree
ALASKA R/H
N.IDAHO R/H
ALASKA D.P.
BURNING INDEX
B.I. FLUCTUATION
0
-10
-20
-30
-40
ALASKA·STICK
·SLAT
N.IDAHO STICK
HOUR
0400
0800
1200
1600
2000
2400

Figure 42

CHAPTER 6
FIRE STATISTICS

HISTORICAL

Forest fires have burned in Interior Alaska for many centuries; their causes were the same as for fires over the rest of the North American continent both then and today — lightning and man. The forests themselves tell the history of the earliest fires; early explorers and other travelers continue the record until modern times.

Fires in the earliest times were doubtless caused by both lightning and Indians, with the greater percentage probably caused by the Indians. The extent of man-caused destruction spiraled upward with the discovery of gold in 1898 in the Klondike country. During single bad years, fires burned over several million acres. Railroad and highway construction led to some of the largest fires in the history of the State (Lutz 1959).

Ever since the gold rush days, an estimated annual average of 1 million acres has burned over in Interior Alaska. Scanning of early reports reveals that some of the worst fire years, prior to the beginning of methodical recordkeeping in 1940, were 1898, 1903, 1913, 1915, and 1923. The fact that apparent burned acreage has not been reduced in recent years can be attributed to better reporting and recording procedures. In earlier days many large burns were never seen, or at least never reported; so probably the burned area was much greater than suspected. Even in Sweden, where forests have been managed and protected for centuries, the number of fires reported annually increased from 400 to 1,100 during the recent 15-year period of 1944 to 1958 (Stromdahl 1959). The increased accuracy in fire reporting in Sweden may explain the apparent decrease of lightning fires from 50 percent to 10 percent of the total.

Ideas about the general cause of fires in Interior Alaska have gradually changed. Heintzleman (1936) stated, "Fires in Alaska are almost wholly man-caused (lightning being a negligible factor) . . . " Also, the Alaska Fire Control Service Annual Report for 1940 stated that there were no lightning-caused fires in Interior Alaska (Robinson 1960). Evidence now on hand shows that these statements were in error; they were made before there was any organized fire protection force or even reporting procedure. Fires that actually were started by lightning were attributed to trappers, miners, and natives. One-fourth of all fires between 1950 and 1958 were reported as lightning-caused, and they accounted for three-fourths of the total acreage burned.

COMPARATIVE STATISTICS

The available data on Alaska forest fires from 1950 through 1958 present a vivid picture of the Alaska fire problem, especially when they are compared with data on forest fires in the other States during the same period.[8] Tabulated data are given in the Appendix (tables 34 through 43) but the conclusions based on these data are presented in the pages immediately following. The Alaska fire problem can be best visualized and understood by direct comparison of pertinent data about separate but related phases of the problem.

INTERIOR ALASKA, WITH CONTINENTAL UNITED STATES

Area Protected

The Bureau of Land Management is responsible for protection of 93 percent of forest land in Alaska. In the other States, responsibility for protection is shared by many agencies and associations. All public domain land in the United States is protected by the Bureau of Land Management; 62 percent of this is in Alaska. This amounts to 27 percent of all land under organized fire protection in the entire United States (fig. 43).

Area Burned

Total area of forest land burned annually in Alaska averages about 1.1 million acres, while the total acreage burned annually on lands

[8]The information presented in this chapter and in chapter 8 is confined to the years 1950 through 1958 since data prior to that year are incomplete and less accurate. Even so, records of the last few years, especially 1957 and 1958, are considerably more reliable than those between 1950 and 1956. Tests of statistical significance for several of the tables indicated poor correlation; thus all tables based upon analysis of individual fire reports should be accepted chiefly for the general information they contain.

managed by all agencies in the other States is slightly more than 3 million. The area burned per fire in Alaska averages some 4,400 acres, whereas, on lands protected by all agencies in other States, the area burned averages only 30 acres per fire (fig. 43).

Number of Fires

The number of reported fires in Interior Alaska is only 1.1 per million acres protected, while for all protected land in the other States the number is 168 (fig 44). The low number of fires per unit area protected is in sharp contrast to the acreage burned per fire as noted in the preceding paragraph.

Severe and Light Fire Seasons

Number of fires.—In comparing numbers of fires between severe and light seasons, we note that each protection group faces comparable difficulties. In numbers of fires, Alaska shows a ratio of 3 fires in a heavy season to 1 in a light season, whereas in other States this ratio is about 2 to 1 (fig. 45). Also, at least for the period of record, both the severest and the lightest seasons in Alaska were not the same years as the severest and lightest seasons in other States.

Acreage burned.—The difference between acreage burned in severe and light years in Alaska is far greater than the difference in acreage burned in severe and light years in other States. The ratios are approximately 135 to 1 and 5 to 1, respectively. In Interior Alaska the greatest number of fires is 1.6 times normal and the area burned is 4.6 times normal, as opposed to 1.3 and 2.2 for all protected land in the other States (fig. 45). The data indicate that an overload of fires causes more destruction in Alaska than in the other States.

The area burned per fire is another indicator of the greater damage encountered in Interior Alaska than in other States when fire-weather conditions become critical. In Interior Alaska a fire may then become 3 times as large as in a normal year and 62 times as large as in an easy year. Suppression forces on protected land in other States have been fortunate in having sufficient strength to confine the ratio to 1.2 and 2.8, respectively (fig. 46). The percent of fires that exceeds Class B size — 10 acres — in worst, normal, and easy years does not vary greatly between areas (fig. 47); the great difference comes in the size of the fires that do exceed 10 acres, as noted above.

Number of Fires by Specific Cause

Lightning causes 24 percent of all fires in Alaska and 35 percent in the other States. A year-by-year record, however, indicates that the apparent ratio of lightning fires to others in Alaska is gradually increasing; this is probably a result of more accurate reporting procedures. Campfires cause 27 percent of all fires requiring suppression action in Alaska, but only 4 percent in other States. Also, in Alaska 21 percent of the wildland fires are caused by debris burning compared to 14 percent in the other States (fig. 48). This indicates the same type of activity in Alaska that occurred in Montana and northern Idaho in the late 1920's and early 1930's when considerable land was being cleared.

Number of Fires by Size Class

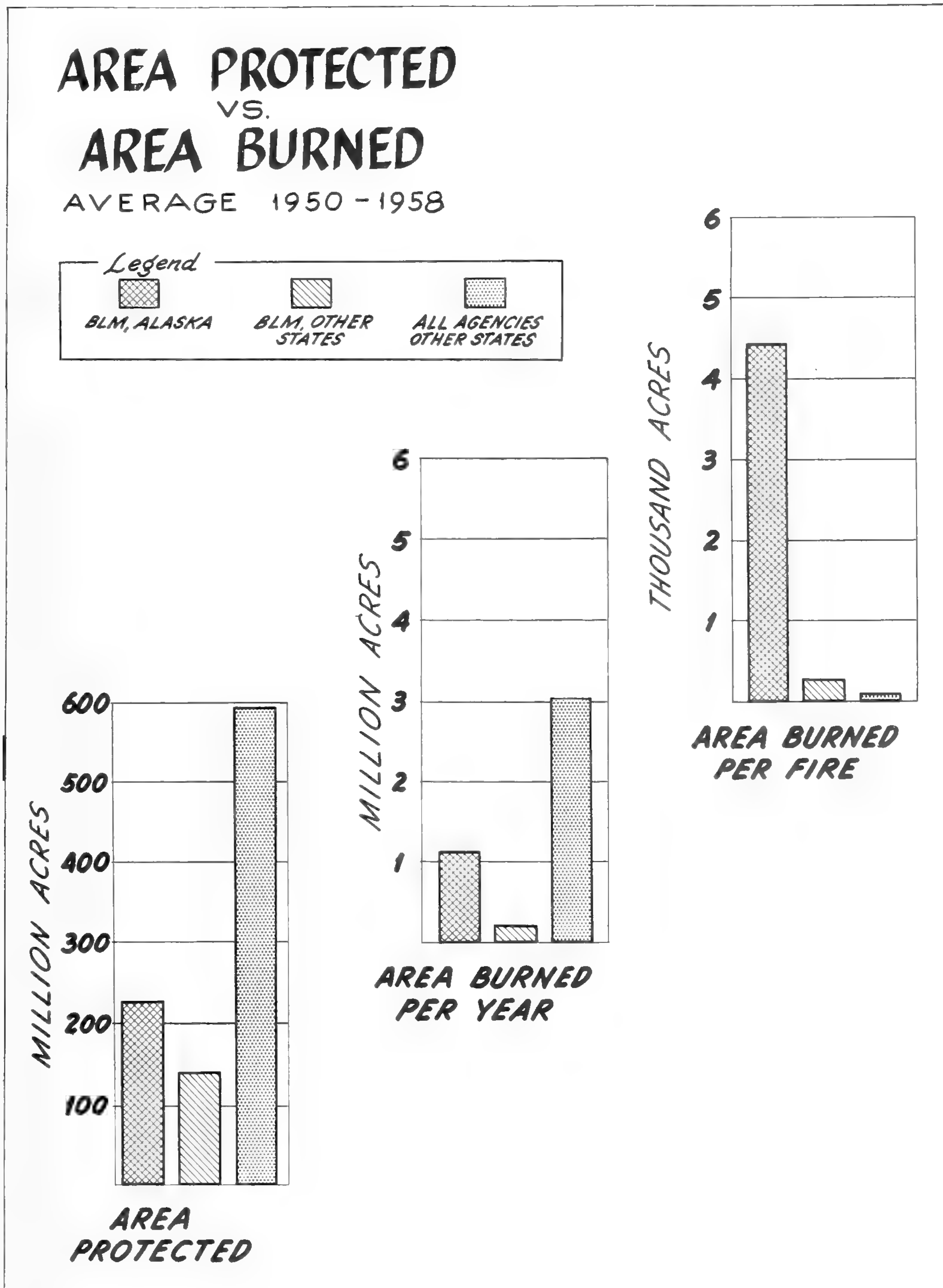
A greater percentage of fires is of Class A size (one-fourth acre or less) on Interior Alaska lands than on lands protected by the Bureau of Land Management in the other States — 42 percent compared to 19 percent, respectively. Both Alaska and other States show a larger percentage of Class E fires (larger than 300 acres) than Class D (100-300 acres). Records indicate that if a fire is not controlled by the time it reaches 300 acres in size, it may not be controlled until it reaches several hundred or even several thousand acres (fig. 49).

Number of Fires per Million Acres Protected

Fire occurrence per million acres protected in Interior Alaska is low compared to that in other States protected by BLM; an average of only 1 fire per million acres occurs annually on Alaskan land while nearly 5 fires per million acres occur on other BLM lands (fig. 50). This occurrence ratio contrasts strikingly to the average acreage burned per fire: 4,400 acres in Interior Alaska versus 267 acres on other BLM lands (fig. 46).

Area Burned According to Fuel Type

The rate-of-spread and resistance-to-control characteristics of fires in Interior Alaskan vegetation is described in reference to cover types instead of fuel types, as explained in chapter 4.



AREA PROTECTED
VS.
AREA BURNED
AVERAGE 1950 - 1958
Legend
BLM, ALASKA
BLM, OTHER STATES
ALL AGENCIES OTHER STATES
MILLION ACRES
600
500
400
300
200
100
AREA PROTECTED
MILLION ACRES
6
5
4
3
2
1
AREA BURNED PER YEAR
THOUSAND ACRES
6
5
4
3
2
1
AREA BURNED PER FIRE

Figure 43

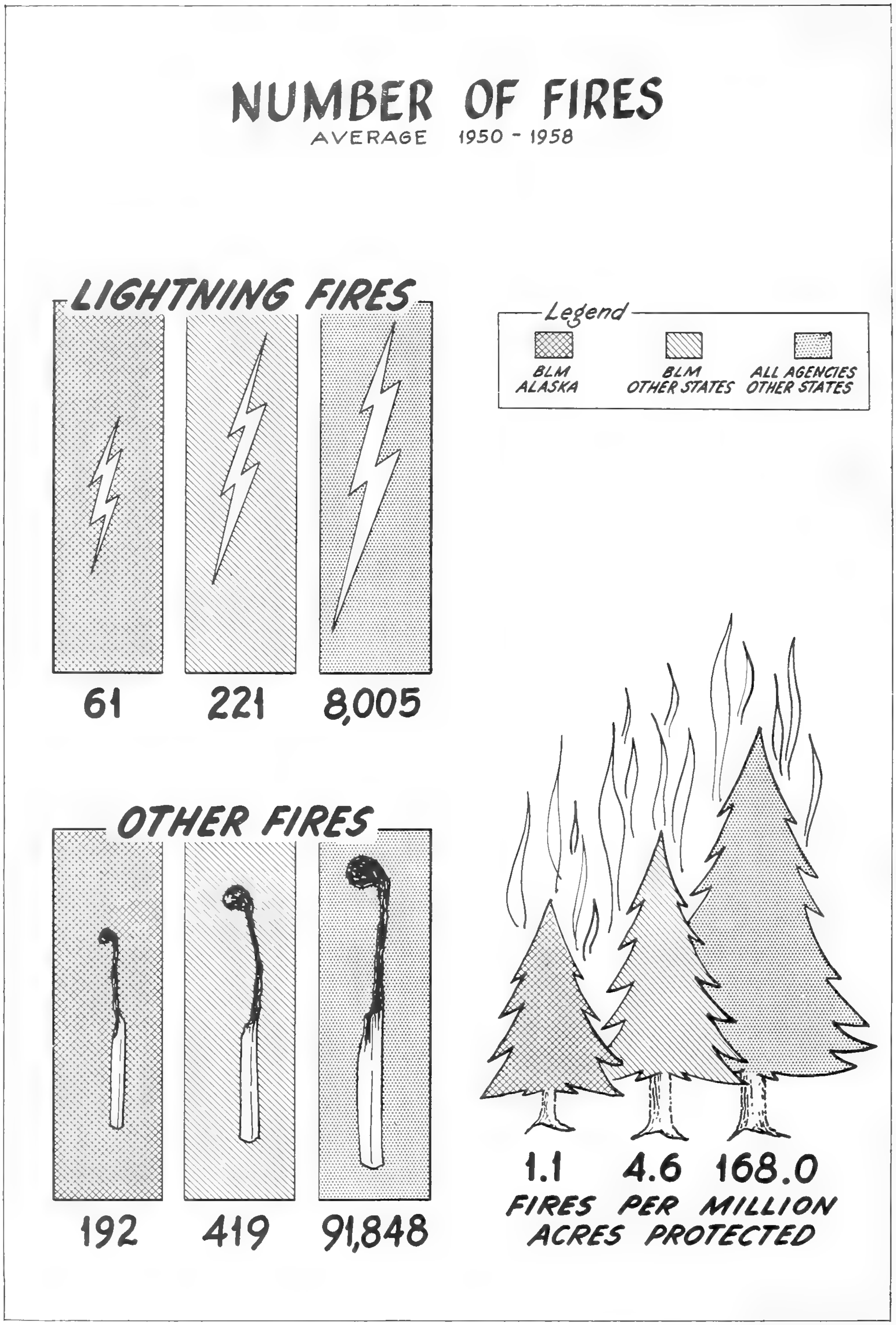

NUMBER OF FIRES
AVERAGE 1950 - 1958
LIGHTNING FIRES
61
221
8,005
OTHER FIRES
192
419
91,848
Legend
BLM ALASKA
BLM OTHER STATES
ALL AGENCIES OTHER STATES
1.1
4.6
168.0
FIRES PER MILLION ACRES PROTECTED

Figure 44

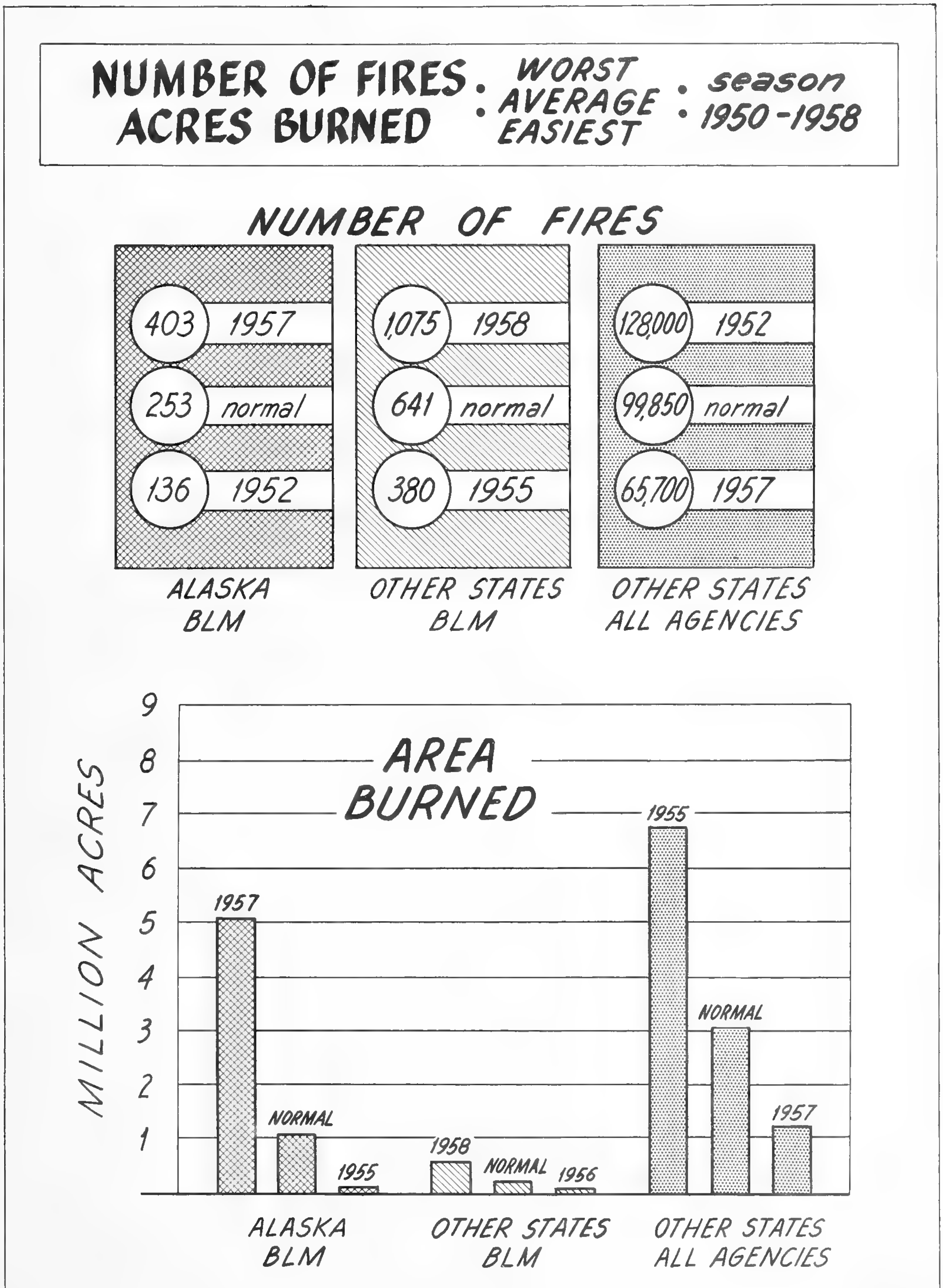
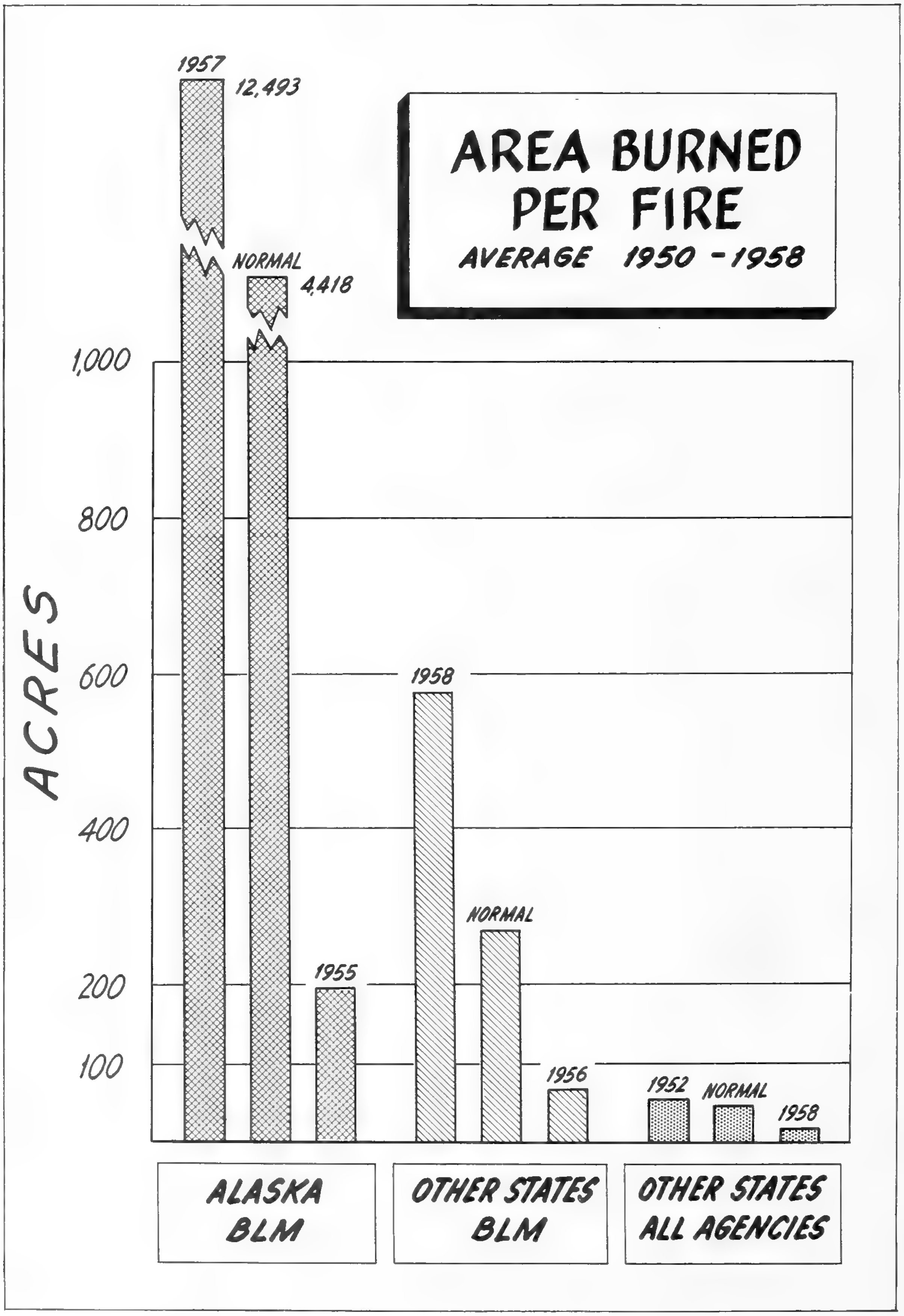

NUMBER OF FIRES . WORST
ACRES BURNED : AVERAGE : season
EASIEST · 1950-1958
NUMBER OF FIRES
403 1957
253 normal
136 1952
1,075 1958
641 normal
380 1955
128,000 1952
99,850 normal
65,700 1957
ALASKA BLM
OTHER STATES BLM
OTHER STATES ALL AGENCIES
AREA BURNED
MILLION ACRES
9
8
7
6
5
4
3
2
1
1957
NORMAL
1955
1958
NORMAL
1956
1955
NORMAL
1957
ALASKA BLM
OTHER STATES BLM
OTHER STATES ALL AGENCIES

Figure 45



AREA BURNED PER FIRE
AVERAGE 1950 - 1958
ACRES
1,000
800
600
400
200
100
1957
12,493
NORMAL
4,418
1955
1958
NORMAL
1956
1952
NORMAL
1958
ALASKA BLM
OTHER STATES BLM
OTHER STATES ALL AGENCIES

Figure 46

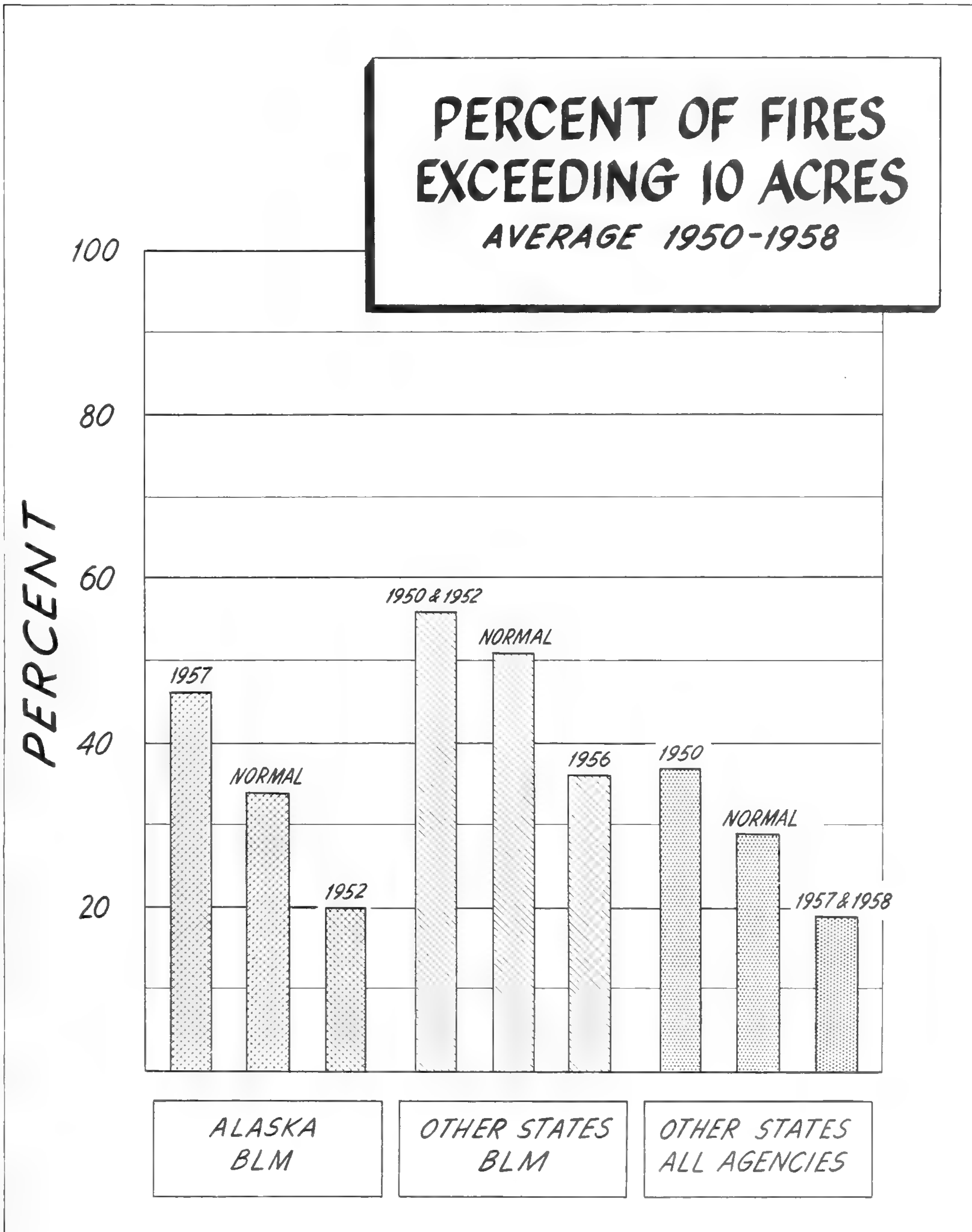
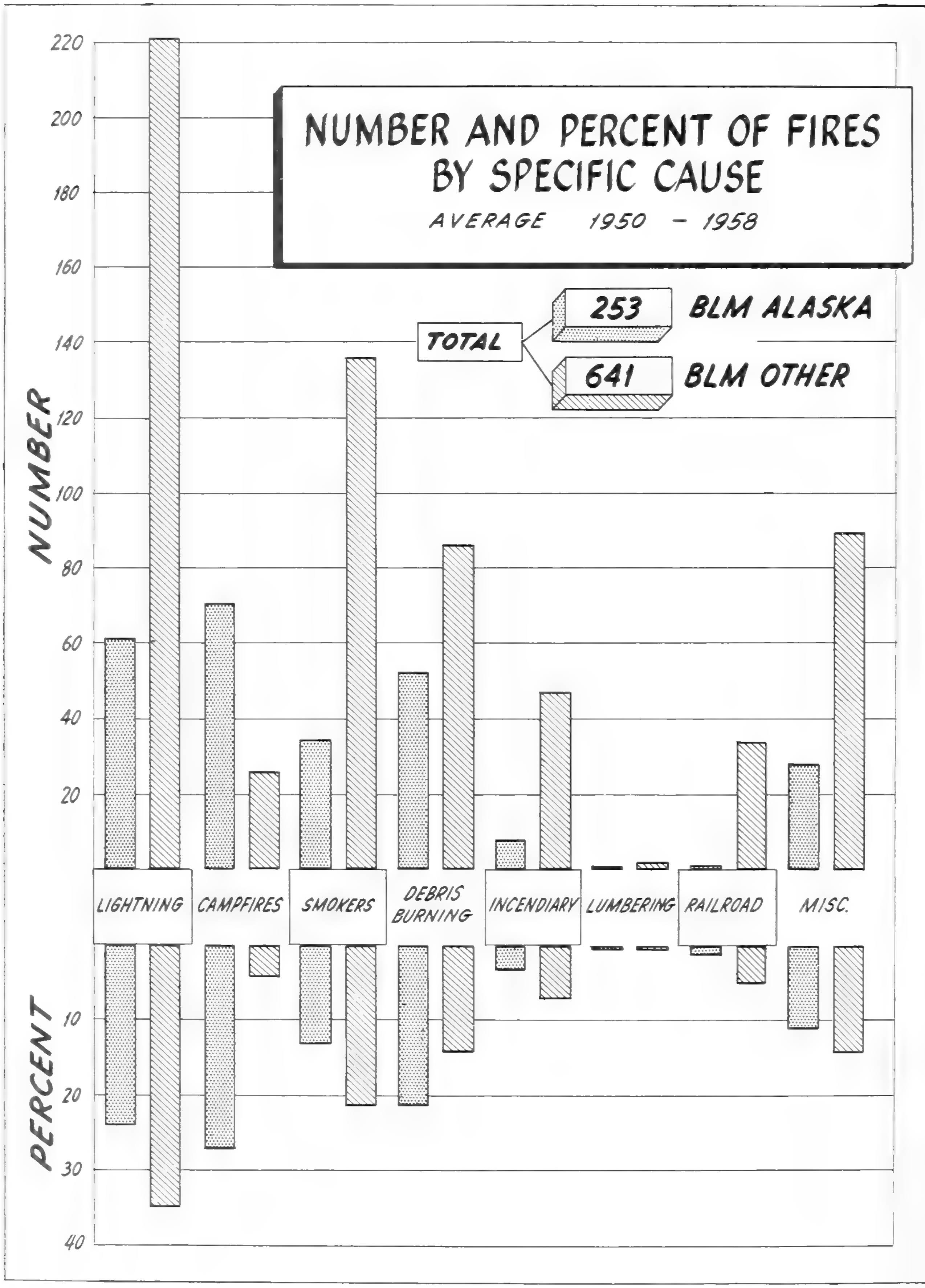

PERCENT OF FIRES
EXCEEDING 10 ACRES
AVERAGE 1950-1958
100
80
60
40
20
PERCENT
1957
NORMAL
1952
1950 & 1952
NORMAL
1956
1950
NORMAL
1957 & 1958
ALASKA
BLM
OTHER STATES
BLM
OTHER STATES
ALL AGENCIES

Figure 47



NUMBER AND PERCENT OF FIRES
BY SPECIFIC CAUSE
AVERAGE 1950 - 1958
TOTAL
253 BLM ALASKA
641 BLM OTHER
NUMBER
PERCENT
220
200
180
160
140
120
100
80
60
40
20
10
20
30
40
LIGHTNING
CAMPFIRES
SMOKERS
DEBRIS BURNING
INCENDIARY
LUMBERING
RAILROAD
MISC.

Figure 48

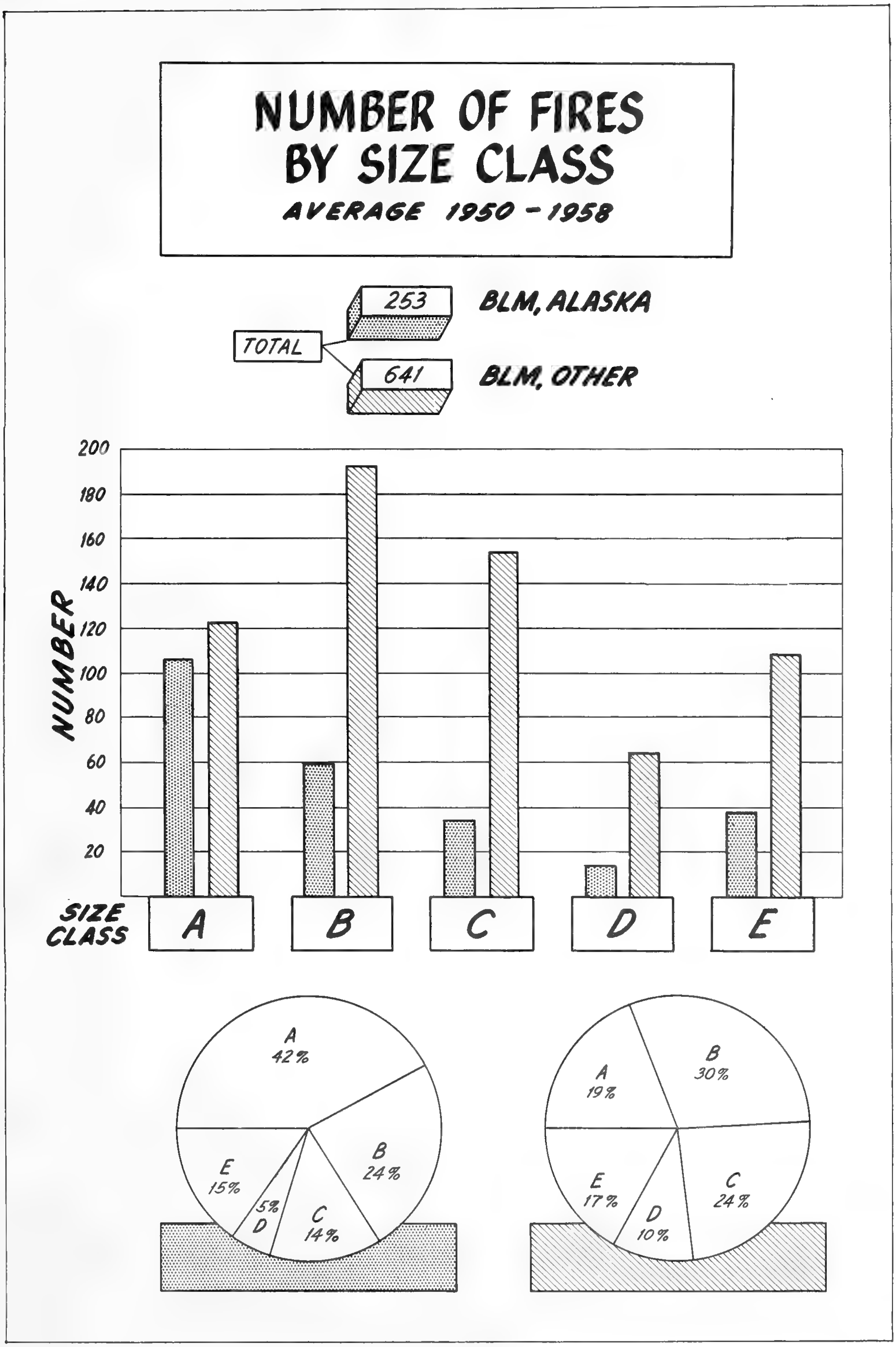

NUMBER OF FIRES BY SIZE CLASS
AVERAGE 1950 - 1958
TOTAL
253
BLM, ALASKA
641
BLM, OTHER
NUMBER
200
180
160
140
120
100
80
60
40
20
SIZE CLASS
A
B
C
D
E
A 42%
B 24%
C 14%
5% D
E 15%
A 19%
B 30%
C 24%
D 10%
E 17%

Figure 49

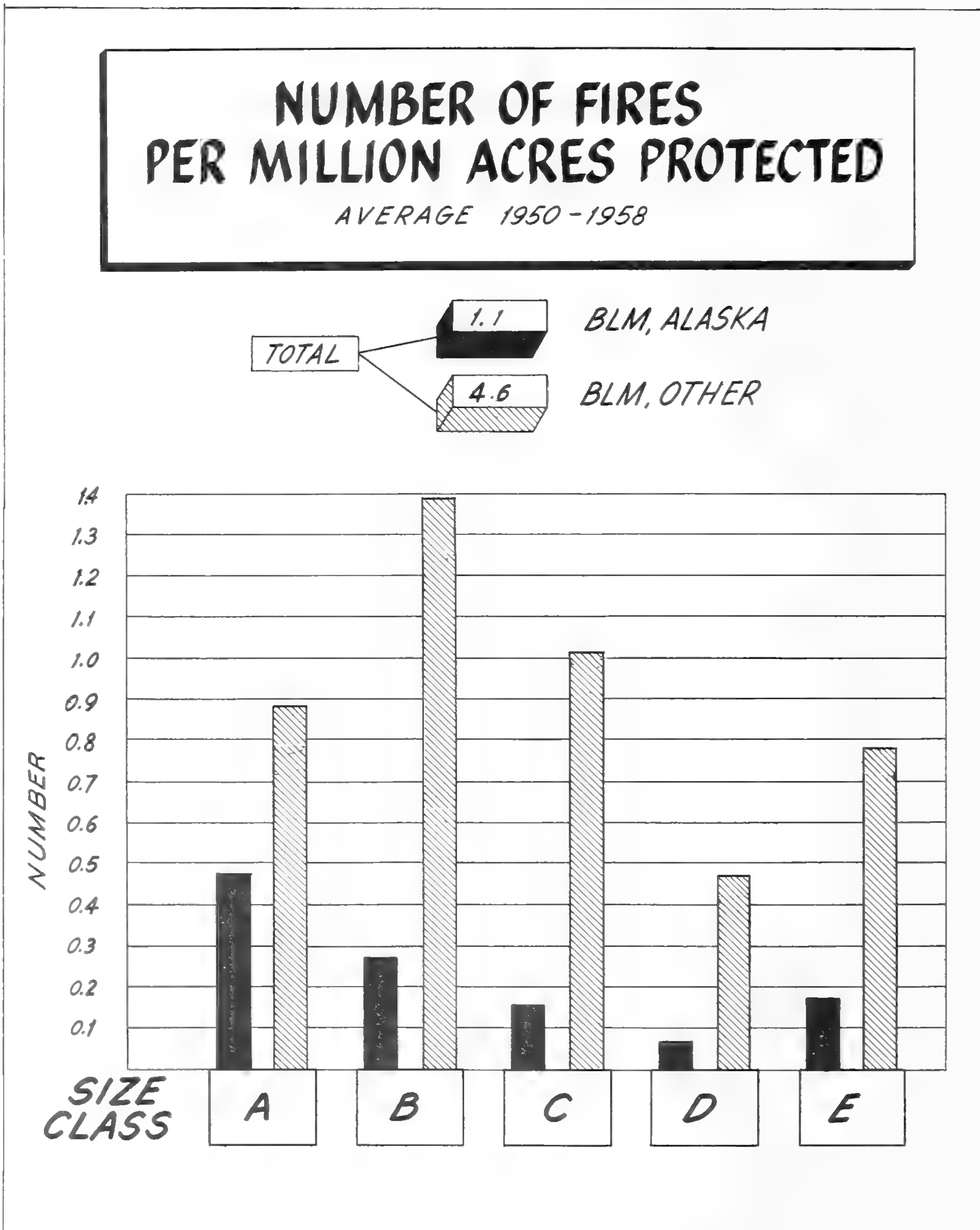

NUMBER OF FIRES
PER MILLION ACRES PROTECTED
AVERAGE 1950-1958
TOTAL
1.1
BLM, ALASKA
4.6
BLM, OTHER
NUMBER
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
SIZE CLASS
A
B
C
D
E

Figure 50

The cover types in Alaska do not correspond to those in continental United States; therefore, no valid comparison of area burned can be made without modifying some terminology. In continental United States rate of spread is greatest in grass fuels. A large share of the lands protected by the Bureau of Land Management in continental United States is covered with grass; the next largest acreage is brushland. In Interior Alaska, grassland comprises a small percent of the total acreage; much of that is on the Kenai peninsula where lightning incidence is very low, accessibility is relatively good, and fire danger seldom becomes critical.

Tundra and related fuels are not included on fire reports; fires in tundra are arbitrarily classed in the "Other" fuel type category. Rate of spread in this complex is as great as, if not greater than, rate of spread in the grass type. The information in figure 51 would be more realistic if most of the BLM Alaska acreage that is now listed in "Other" fuels were placed in the "Grass" category.

Seventy-four percent of the acreage burned in Interior Alaska is in forest or tundralike fuels. Eighty-eight percent of the acreage burned on other BLM protected lands is in brush and grass fuels. Forty percent of the acreage burned in Interior Alaska is in forest fuels, compared with only 7 percent on other BLM protected land. A relatively greater strength-of-attack force is needed for controlling fires in forested land.

INTERIOR ALASKA, WITH SOUTHEASTERN ALASKA

Up to this point all of the statistics have referred only to Interior Alaska. The differences in weather factors and fire loads between the two sections of the State make this understandable. The brief tabulation below compares the precipitation patterns of Interior Alaska with those of southeastern Alaska; it reveals two entirely different climatic situations. Interior Alaska has been termed "the green desert," but southeastern Alaska approaches a rain forest condition.

Interior stations	Normal annual precipitation	Southeastern stations	Normal annual precipitation
	Inches		Inches
Fort Yukon	6.54	Seward	68.08
Fairbanks	11.92	Juneau	90.25
Anchorage	14.27	Sitka	96.33
Bethel	18.17	Ketchikan	151.93

Past fire records place nearly all the Alaska fire incidence and burned area within the Interior (table 14).

Abundance of precipitation in the southeast accounts for the heavy stands of Sitka spruce and western hemlock timber. Much of it is overmature: this indicates relative freedom from fire. But many stands in southeastern Alaska do show evidence of fire in their age and species composition.

Fire potential in the southeast increases as timber is cut. Large volumes of logging slash accumulate and expose the ground surface to insolation and rapid drying; this encourages growth of flammable grass and annual weeds. The number of people in and near the woods also increases as utilization increases.

The most urgent task is to reduce the annual burned area in Interior Alaska from the present 1,119,130 acres. However, the fire potential in the southeastern section must be realized; collection of certain elements of background information there will be of value to any fire research program that may ultimately be established.

WITHIN INTERIOR ALASKA

Lightning and Man-Caused Fires

Only 24 percent of all forest fires in Alaska are lightning caused, while 76 percent of the acreage burned is due to lightning fires (fig. 52). Inadequate storm detection and difficult accessibility contribute to the high area-to-incidence ratio. Probably the greatest fire control challenge is to reduce the acreage of lightning fires to approach the incidence percentage. Early detection and fast attack facilities will help bring the acreage burned into line with the number of fires.

Fires on Which No Suppression Action Was Taken

Several interesting but often confusing statistics result from comparing the group of fires on which suppression action was taken with the group that burned completely unrestricted. Already mentioned is the fact that control action cannot be taken on some fires because: (1) they are physically inaccessible; (2) they are so large when discovered that no reasonable force of men could stop them (economically inaccessible); (3) limited manpower makes it imperative to

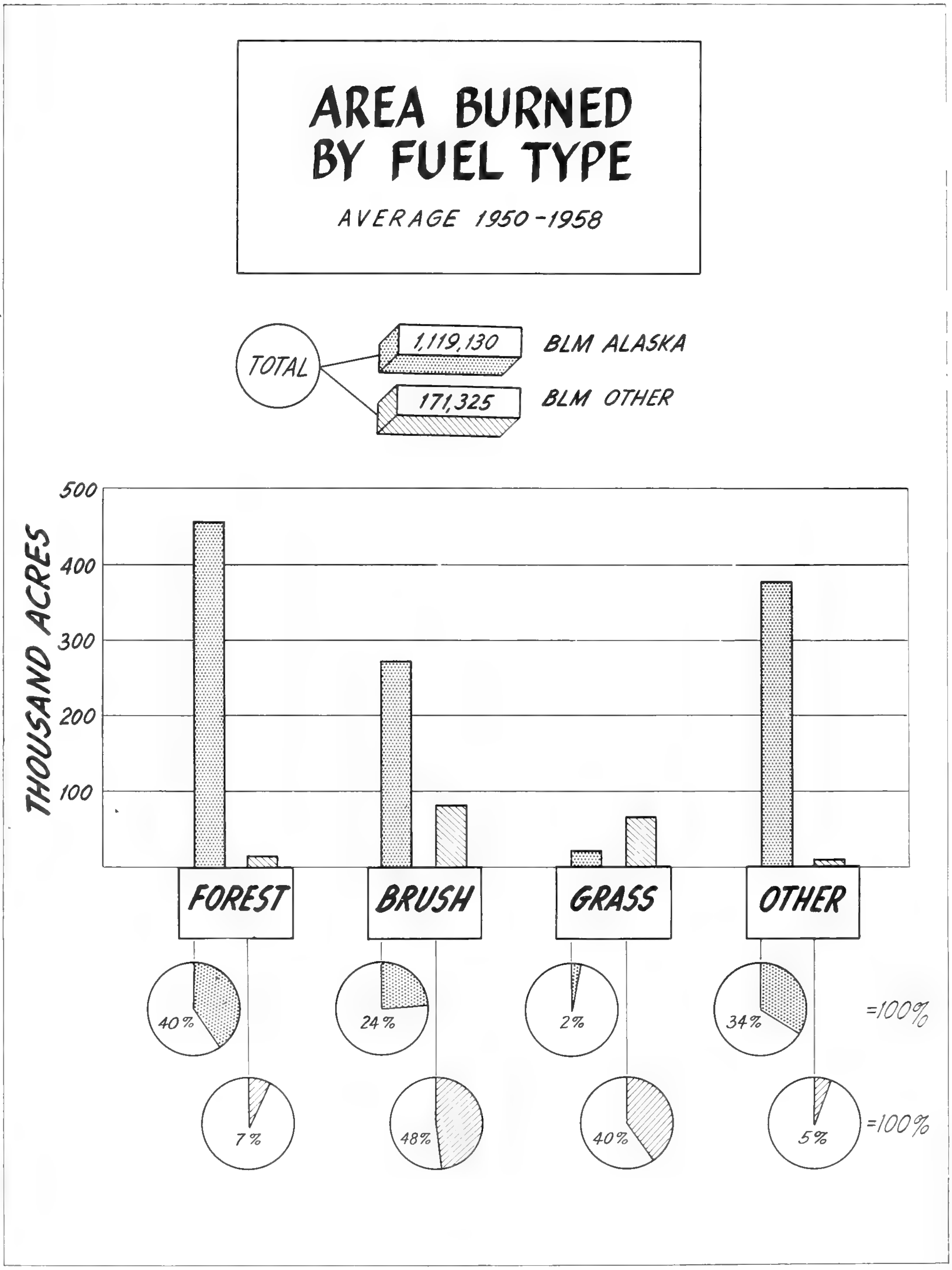

AREA BURNED BY FUEL TYPE
AVERAGE 1950-1958
TOTAL
1,119,130
BLM ALASKA
171,325
BLM OTHER
THOUSAND ACRES
500
400
300
200
100
FOREST
BRUSH
GRASS
OTHER
40%
24%
2%
34%
=100%
7%
48%
40%
5%
=100%

Figure 51

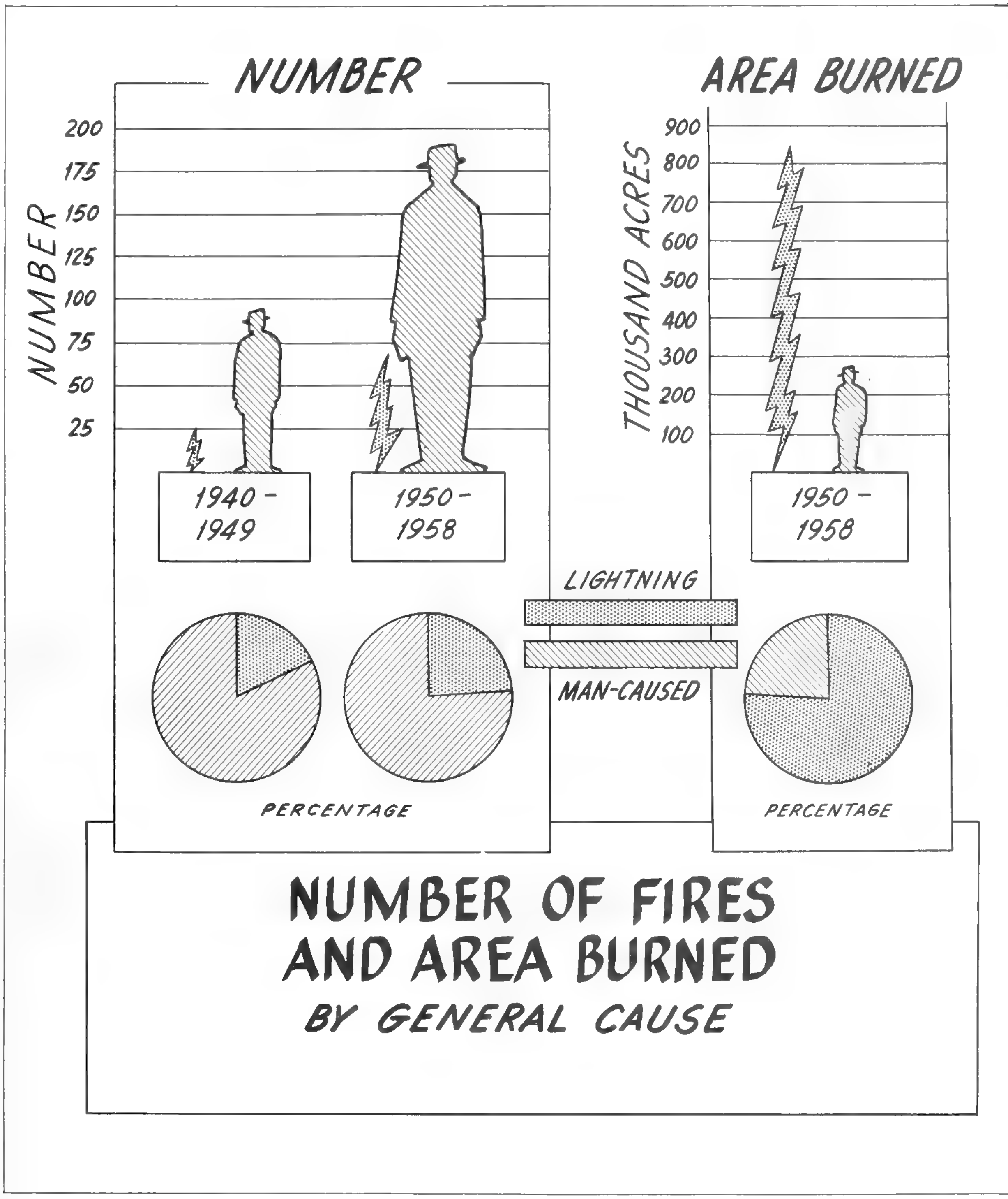

NUMBER
AREA BURNED
200
175
150
125
100
75
50
25
NUMBER
900
800
700
600
500
400
300
200
100
THOUSAND ACRES
1940 - 1949
1950 - 1958
1950 - 1958
LIGHTNING
MAN-CAUSED
PERCENTAGE
PERCENTAGE
NUMBER OF FIRES AND AREA BURNED
BY GENERAL CAUSE

Figure 52

Table 14.—**Fire statistics, Interior versus Southeastern Alaska**

	Lightning				Man-caused				Total			
	Interior		Southeast		Interior		Southeast		Interior		Southeast	
	Number	Acres	Number	Acres	Number	Acres	Number	Acres	Number	Acres	Number	Acres
1940-49	200	no data	1	0+	938	no data	292	1,649	1,138	12,411,076	293	1,649
1950-58	546	7,665,726	3	1	1,734	2,406,442	234	5,738	2,280	10,072,168	237	5,739
1950-58 Av.	61	851,747	0.3	0+	193	267,382	26	638	253	1,119,130	26	638

Source: Southeast: National Forest Fire Reports, USDA, Forest Service.
Interior: Annual Reports of the Director (Statistical Appendix).

choose between fires when many start during a short period; and (4) under a general smoke pall some fires burn without being detected.

Thirty-three percent of all lightning fires are never attacked, while only 9 percent of man-caused fires are not; however, the actual number of no-action fires per year is about the same for both general causes. This 9 percent accounts for 68 percent of the area burned by man-caused fires.

A lightning fire usually is 10 times the size of a man-caused fire; but an average *no-action* lightning fire is only 1½ times the size of a *no-action* man-caused fire. Many lightning fires are held down in early stages by such elements of moderate weather as clouds, high humidity, and precipitation; this is not often true for man-caused fires. Table 15 and figure 53 contain the specific information for the above discussion.

Why an average no-action lightning fire is only slightly larger than an action lightning fire can lead to many conjectures. A partial explanation can be: (1) the more potentially dangerous fires are attacked first; (2) action not taken because known barriers may restrict the fires to small size; and (3) initial attack on some action fires occurs after they have become too large to control; they are subsequently abandoned — hence, large acreages appear on the action fire side of the ledger that otherwise would have been charged against no-action fires. The percentage of lightning fires upon which no action was taken has been materially reduced since 1956.

Table 15.—**Fires receiving suppression action**

Type of fire	Action status	Number	Total area burned		Average area per fire	
			Acres	Percent	Acres	Ratio
Lightning	No action	20	303,214		15,161	
	Action	41	549,574		13,404	
	Total	61	852,788	76	13,980	10
Man-caused	No action	17	181,514		10,677	
	Action	176	84,828		482	
	Total	193	266,342	24	1,380	1
Total		254	1,119,130		4,406	

Monthly Variation in Fire Frequency and Size

Lightning fires.—Virtually no lightning fires occur before mid-May or after the end of August. Eighty-eight percent of all lightning fires start during June and July. Class D fires are a very small percentage of the total number of lightning fires in any one month, but the number of Class E fires is consistently greater than that for any other class (fig. 54).

Man-caused fires.—The frequency pattern for man-caused fires deviates considerably from that of the lightning fire (fig. 54). For nearly all

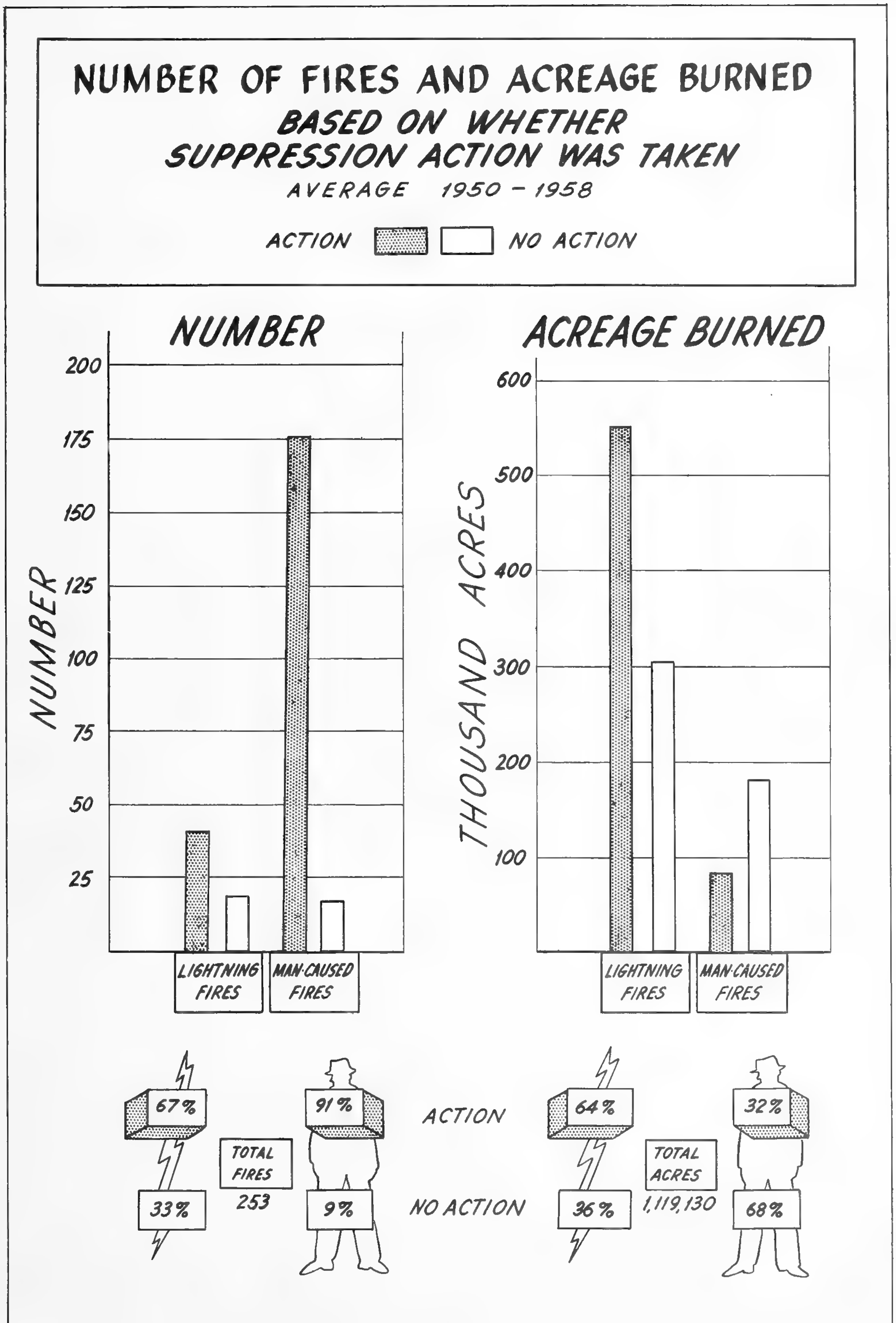

NUMBER OF FIRES AND ACREAGE BURNED
BASED ON WHETHER
SUPPRESSION ACTION WAS TAKEN
AVERAGE 1950 - 1958
ACTION
NO ACTION
NUMBER
200
175
150
125
100
75
50
25
NUMBER
LIGHTNING FIRES
MAN-CAUSED FIRES
ACREAGE BURNED
600
500
400
300
200
100
THOUSAND ACRES
LIGHTNING FIRES
MAN-CAUSED FIRES
67%
91%
ACTION
64%
32%
TOTAL FIRES
253
TOTAL ACRES
1,119,130
33%
9%
NO ACTION
36%
68%

Figure 53

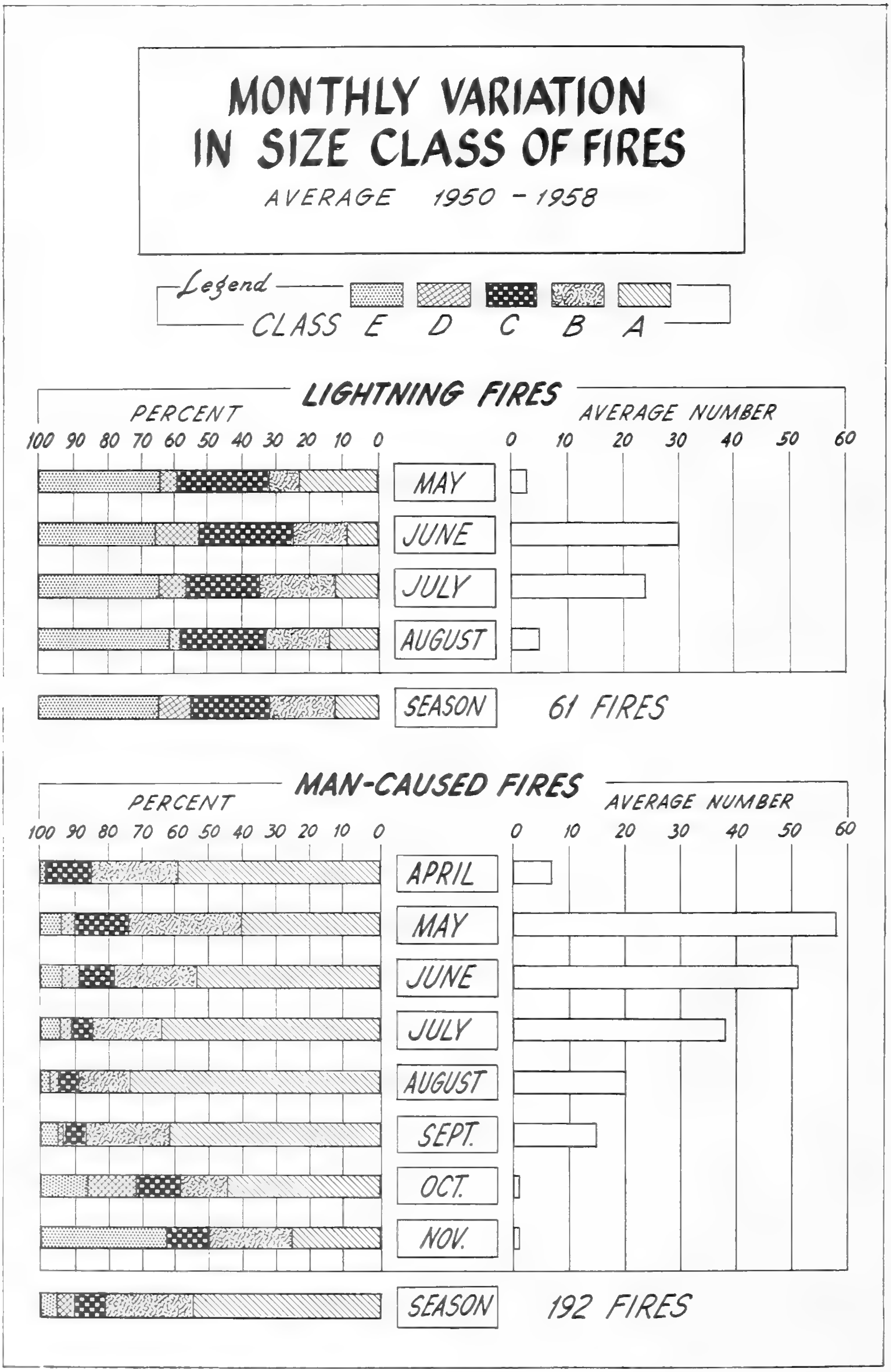

MONTHLY VARIATION IN SIZE CLASS OF FIRES
AVERAGE 1950 - 1958
Legend
CLASS E D C B A
LIGHTNING FIRES
PERCENT
100 90 80 70 60 50 40 30 20 10 0
AVERAGE NUMBER
0 10 20 30 40 50 60
MAY
JUNE
JULY
AUGUST
SEASON
61 FIRES
MAN-CAUSED FIRES
PERCENT
100 90 80 70 60 50 40 30 20 10 0
AVERAGE NUMBER
0 10 20 30 40 50 60
APRIL
MAY
JUNE
JULY
AUGUST
SEPT.
OCT.
NOV.
SEASON
192 FIRES

Figure 54

of the season the greatest percentage of the fires caused by man is Class A. Fifty-seven percent of the fires occur in May and June — a month earlier than for lightning fires; land-clearing operations are a major reason for this early peak-load. Only a few fires occur in October and November, but a larger percentage of them reaches Class E size because the entire detection and control force has been drastically reduced by this time.

Acreage burned.—The record of actual acreage burned in each month (fig. 55) shows clearly that the small number of Class E fires during May, June, and July accounts for most of the total amount. Seventy-three percent of all acreage burned by lightning fires occurs in June. Seventy percent of all acreage burned by man-caused fires occurs in May. Lightning fires continue to burn much larger acreages in July than do man-caused fires; in fact, July lightning fires burn almost the same acreage as man-caused fires do in May.

Yearly Variation in Fire Frequency and Size

For the 9-season period studied, the generalization could be made that as the total number of fires increased, the number of Class E fires also increased, and the number of Class A fires decreased. This relationship is partly due to overloading of the fire control organization and partly due to many fires reaching such large size that no effective suppression action could be taken. The percentage of the Class B, C, and D fires does not vary greatly from year to year; the main difference in percentage is between Class A and Class E fires (fig. 56). The area-burned-per-fire record for 1957 — the worst year — and 1955 — the easiest year (fig. 46) — falls within this number-size class relationship.

Distribution of Fires

Fire control strategy cannot be planned properly without first knowing where and when fires are most likely to occur. Bases must be established and personnel deployed and shifted according to this knowledge. Data from the analysis of fires from 1950 through 1958 were insufficient to make detailed occurrence isograms for individual years or for separate size classes; however, figures 57 and 58 show the number of man-caused fires and lightning fires per million acres for this period.

Most man-caused fires burn near population centers and along the primary highways connecting these principal cities (fig. 57). Exceptions to this general rule are such towns as Tanana and Fort Yukon. No roads go near these towns, but in Alaska they are still centers of population or distribution points.

Distribution of lightning fires (fig. 58) appears somewhat similar to that for man-caused fires in respect to their apparent concentrations near the larger towns and along the primary highways—particularly around Fairbanks, Tanacross, and the connecting road. Other apparent centers of lightning fire frequency are near Kotzebue, Galena, McGrath, and between Eagle and Central along the Canadian border. The scatter of fires was so great that this table at best could show only an approximation.

If complete detection coverage were possible, the lightning fire isogram might appear considerably different. Over the past many years, detection and reporting have been almost entirely by such volunteers as airplane pilots, travelers, local residents, and miners. We now know that many lightning fires occur in areas for which the isogram indicates a low frequency. Some of these fires burn large areas, and some may combine with other fires and appear as only one for reporting purposes. Others burn and die out without being reported. Many fires do not spread beyond a very small size, and their existence is never known. Better detection and better reporting methods will no doubt change the pattern of the lightning fire isogram during the next few years. More information pertaining to fire distribution according to size class and distance from headquarters appears in chapter 8.

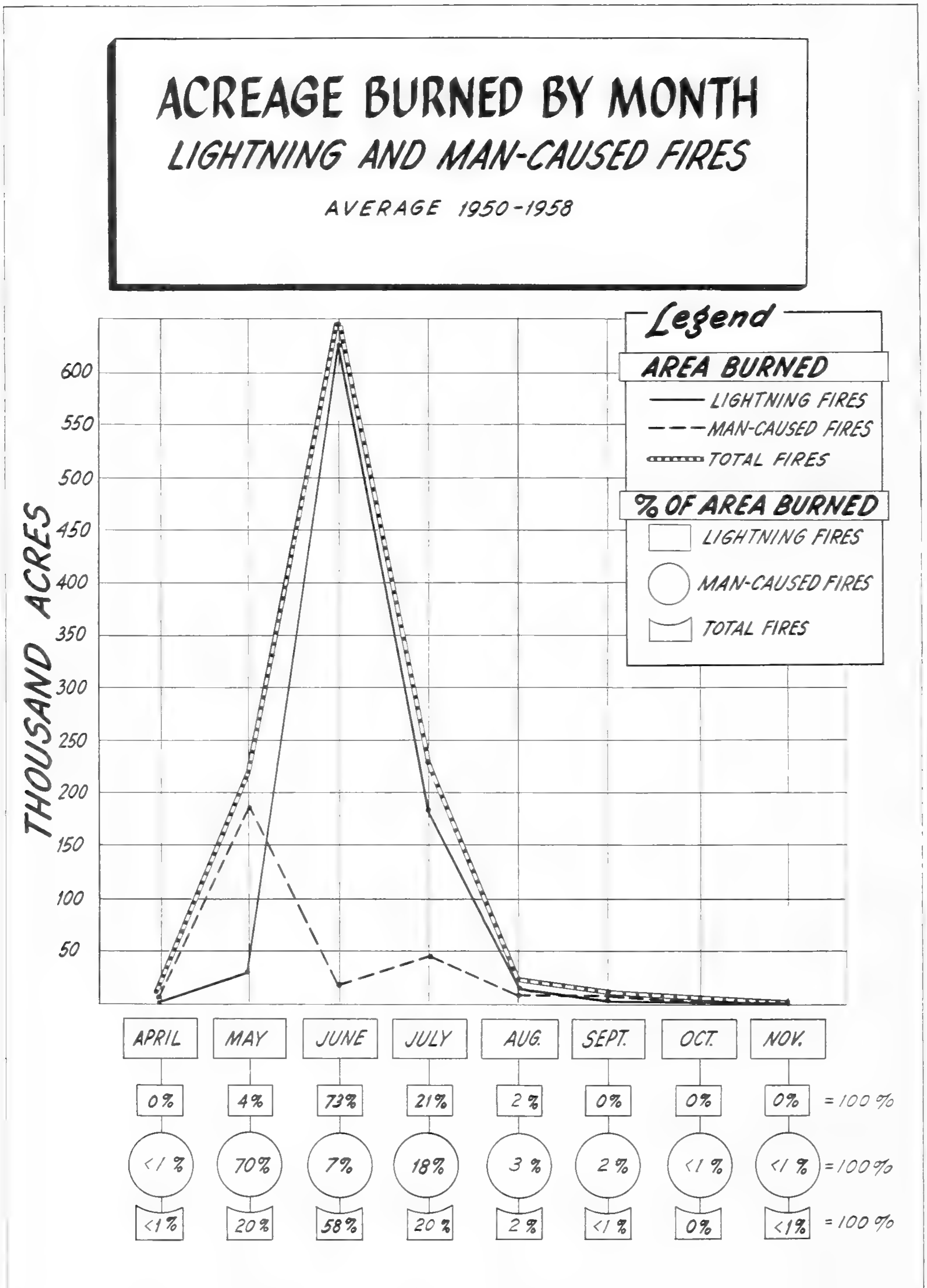

ACREAGE BURNED BY MONTH
LIGHTNING AND MAN-CAUSED FIRES
AVERAGE 1950-1958
Legend
AREA BURNED
LIGHTNING FIRES
MAN-CAUSED FIRES
TOTAL FIRES
% OF AREA BURNED
LIGHTNING FIRES
MAN-CAUSED FIRES
TOTAL FIRES
THOUSAND ACRES
600
550
500
450
400
350
300
250
200
150
100
50
APRIL
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
0%
4%
73%
21%
2%
0%
0%
0%
= 100 %
<1 %
70%
7%
18%
3 %
2 %
<1 %
<1 %
= 100 %
<1%
20%
58%
20%
2%
<1%
0%
<1%
= 100 %

Figure 55

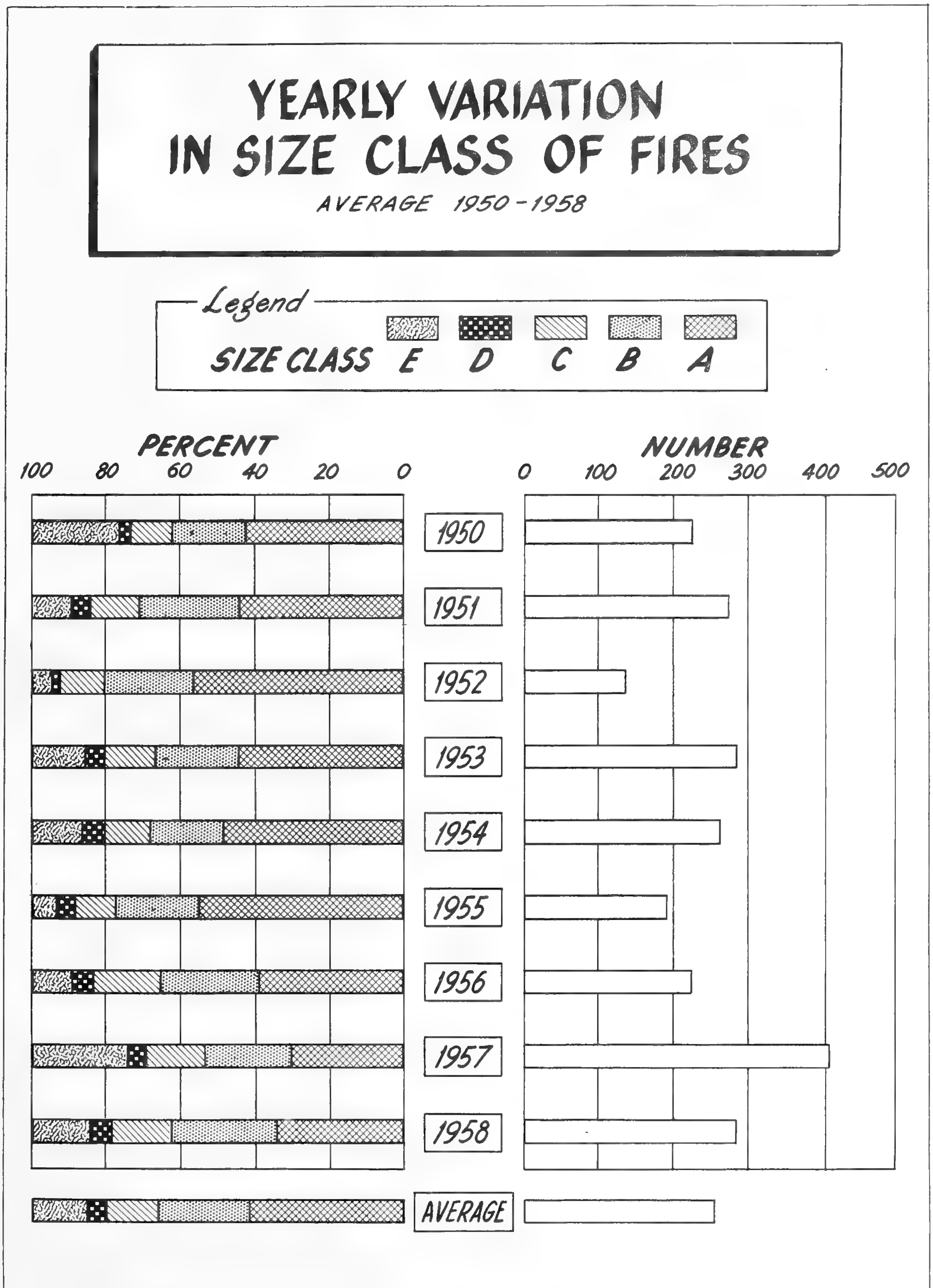

YEARLY VARIATION
IN SIZE CLASS OF FIRES
AVERAGE 1950-1958
Legend
SIZE CLASS E D C B A
PERCENT
100 80 60 40 20 0
NUMBER
0 100 200 300 400 500
1950
1951
1952
1953
1954
1955
1956
1957
1958
AVERAGE

Figure 56

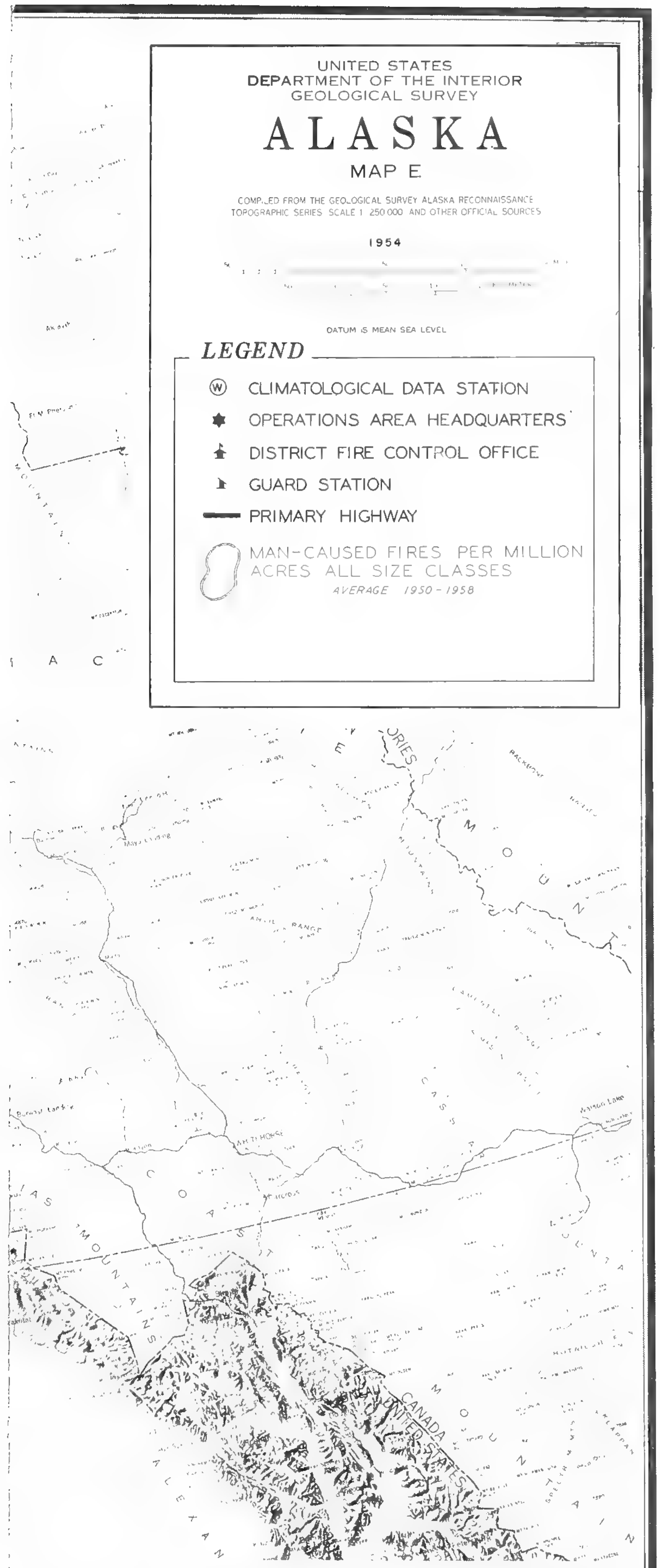

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
COMPILED FROM THE GEOLOGICAL SURVEY ALASKA RECONNAISSANCE TOPOGRAPHIC SERIES SCALE 1:250,000 AND OTHER OFFICIAL SOURCES
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
MAN-CAUSED FIRES PER MILLION ACRES ALL SIZE CLASSES
AVERAGE 1950 - 1958
CANADA

Figure 57

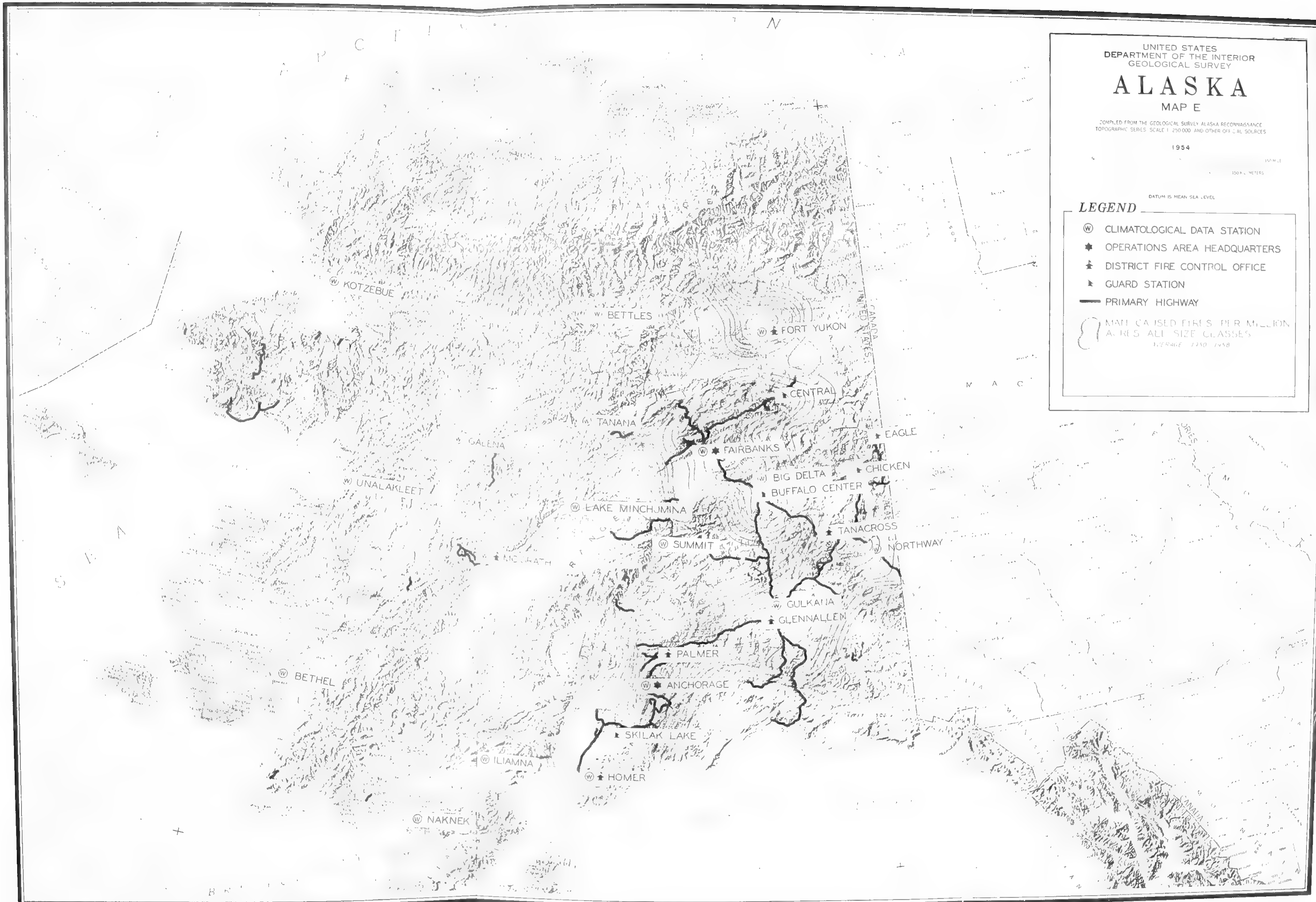

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
COMPILED FROM THE GEOLOGICAL SURVEY ALASKA RECONNAISSANCE
TOPOGRAPHIC SERIES SCALE 1:250,000 AND OTHER OFFICIAL SOURCES
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
MAN CAUSED FIRES PER MILLION
ACRES ALL SIZE CLASSES
KOTZEBUE
BETTLES
FORT YUKON
CENTRAL
TANANA
FAIRBANKS
EAGLE
GALENA
CHICKEN
BIG DELTA
BUFFALO CENTER
UNALAKLEET
LAKE MINCHUMINA
TANACROSS
SUMMIT
NORTHWAY
GULKANA
GLENNALLEN
PALMER
BETHEL
ANCHORAGE
SKILAK LAKE
ILIAMNA
HOMER
NAKNEK
UNITED STATES
CANADA

Figure 57

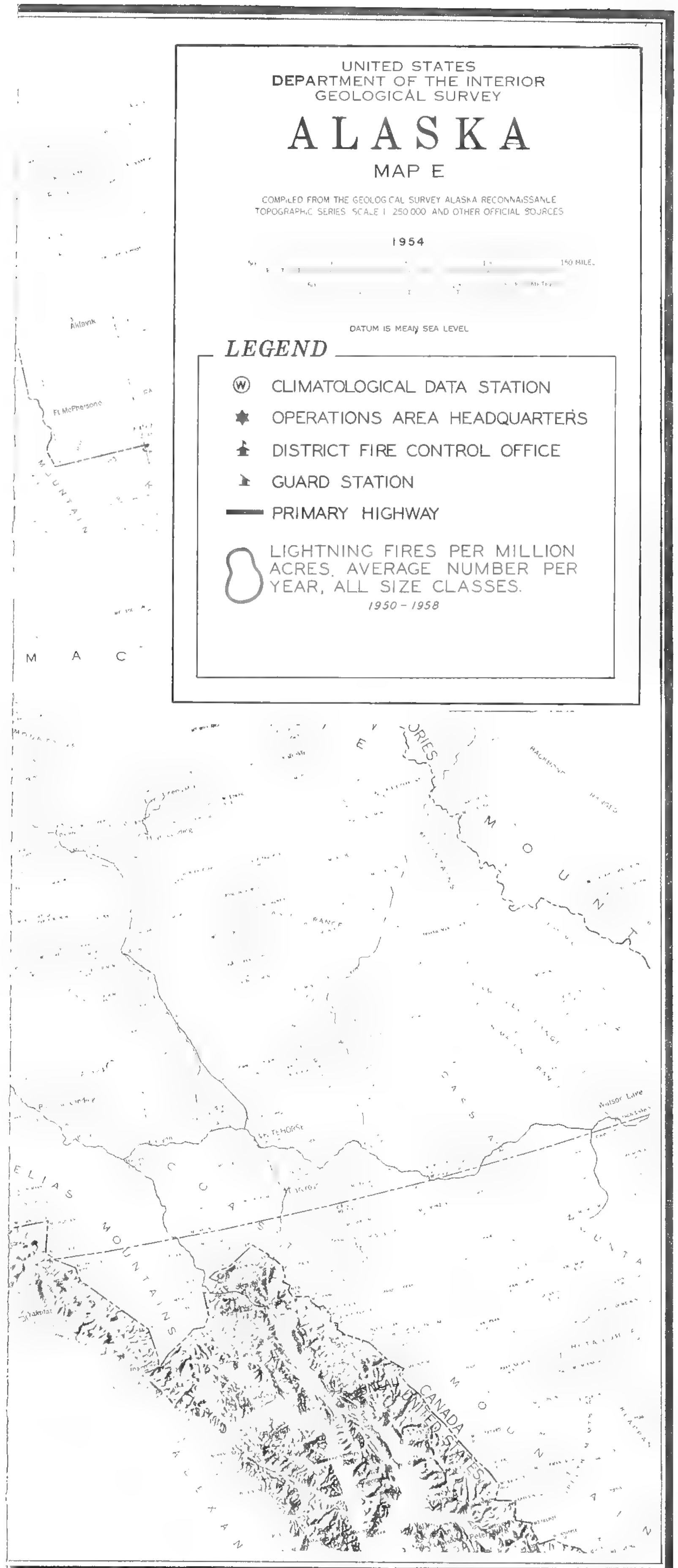

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
LIGHTNING FIRES PER MILLION ACRES, AVERAGE NUMBER PER YEAR, ALL SIZE CLASSES.
1950 - 1958
CANADA
UNITED STATES

Figure 58

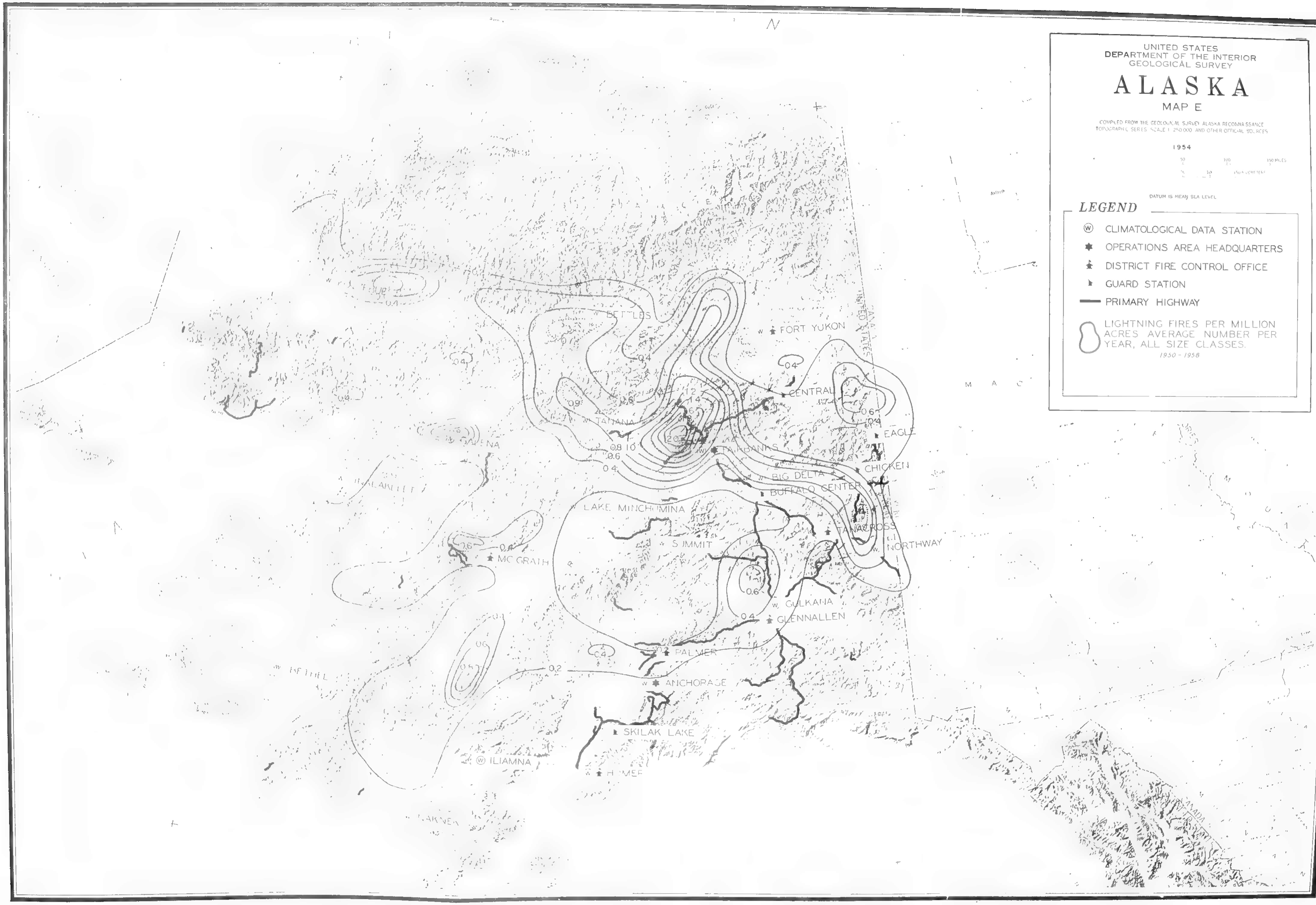

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
LIGHTNING FIRES PER MILLION ACRES AVERAGE NUMBER PER YEAR, ALL SIZE CLASSES.
1950 - 1958
N
FORT YUKON
CENTRAL
EAGLE
CHICKEN
BIG DELTA
BUFFALO CENTER
TANACROSS
NORTHWAY
FAIRBANKS
TANANA
LAKE MINCHUMINA
SUMMIT
MC GRATH
GULKANA
GLENNALLEN
PALMER
ANCHORAGE
SKILAK LAKE
ILIAMNA
BETHEL
UNITED STATES
0.2
0.4
0.6
0.8
1.0
1.2
1.4
2.0

Figure 58

CHAPTER 7

FIRE CASE HISTORIES

Why do fires in Interior Alaska get so large so fast? What is the actual rate of perimeter and forward spread? What weather factors are associated with various rates of spread? And, is the rate of spread significantly different between fuel types?

Preliminary investigation of research needs showed an almost complete lack of recorded data in the form of weather, fuels, or behavior that would aid in answering these questions. In 1958 a case history study of fires in Interior Alaska was started. During that and the following year, two 2-man teams, equipped with portable fire-weather stations (fig. 59), gathered data from 19 fires; case histories of seven are presented here (fig. 60).

USFS

Figure 59. — Portable fire-weather station.

The most valuable data were collected during the free-burning period before control action altered the spread rate of the fires. Thus, data for several of the fires cover a period of only a few hours, even though the fires may have spread for a much longer time. Results of this study indicate that nearly all extreme behavior can be explained qualitatively but not quantitatively.

HEALY FIRE

The Healy fire burned 40,320 acres because of continual high winds. Healy is on the lee side of a major pass in the Alaska Range, between the Anchorage-Susitna River area and the Nenana River-Fairbanks area. Prevailing winds augment night downslope winds and override daytime upslope wind tendencies. Nonuniform topography downwind may also have caused erratic local winds and eddies.

The fire originated in a coal seam that had been smouldering for several years. At the time of discovery, midafternoon on July 4, 1958, it covered 50 acres. By 2300 it had increased to 100 acres, and was burning on steep, rocky terrain covered with black spruce, brush, and dense grass.

Excerpts from the narrative report of the fire indicate the influence of the continual high winds in thwarting early control:

> The wind made it almost impossible to do anything for about the first two weeks of the fire . . . 3/4 of the time men on the ground couldn't keep ahead of the fire . . .
>
> After five inches of rain and four days since the last smoke, we felt reasonably safe and left the Healy wind tunnel.

Weather and behavior records collected by the team after its arrival on July 8 showed that the major runs occurred on July 9, 10, and 11, although relative humidity was rarely below 50 percent and burning index was around 20. The worst burning condition prevailed on July 26 (32 percent relative humidity, burning index 44);

however, since control was near there was no appreciable spread. One topographic feature hampering control of the fire was a bald mountain that caused the fire to split and form two heads. A note at the July 8/2200 reading indicates an interesting general wind situation: "The smoke is still being carried away by the fast surface winds, but as it reaches the flat country at the base of the mountain the smoke rises and forms huge cloud formations."

The fire was declared under control on August 1.

MURPHY DOME FIRE

No single factor can be pinpointed as the major cause of this fire that scorched 13,300 acres. Broken topography to the lee of a broad valley, cumulus clouds and even thunderstorms in the vicinity, and high burning indexes all contributed at various times. This lightning fire started on July 2, 1958, and covered 3 acres at discovery time the next morning. When initial attack forces arrived 5 hours later, it was at 500 acres, and by evening was 1,500 acres. The primary fuel at first attack was heavy black spruce, with a light understory of grass, brush, and deadwood. The fire burned through some birch and aspen stands, and near the top of Murphy Dome raced through a gradually thinning tundra cover.

Weather records show that either towering cumulus or mature thunderhead clouds were in the vicinity whenever the fire made a big run — a rather good indication of unstable air and downdraft conditions. The highest burning indexes (66 and 58) fell on the 2 days during which the greatest spread occurred — July 5 and 13.

Several features of topography apparently affected the erratic behavior of this fire. The wind directions recorded at the fire differ from those recorded at Fairbanks. Winds coming across the broad Tanana valley on both the western and southern sides of the fire area were broken by the mountains in which the fire burned. The northeast-southwest flowing Goldstream Creek and its steep tributaries further complicated the consistency of airflow. The whole topographic complex made it nearly impossible to predict the path of the fire.

The fire was declared controlled on July 21.

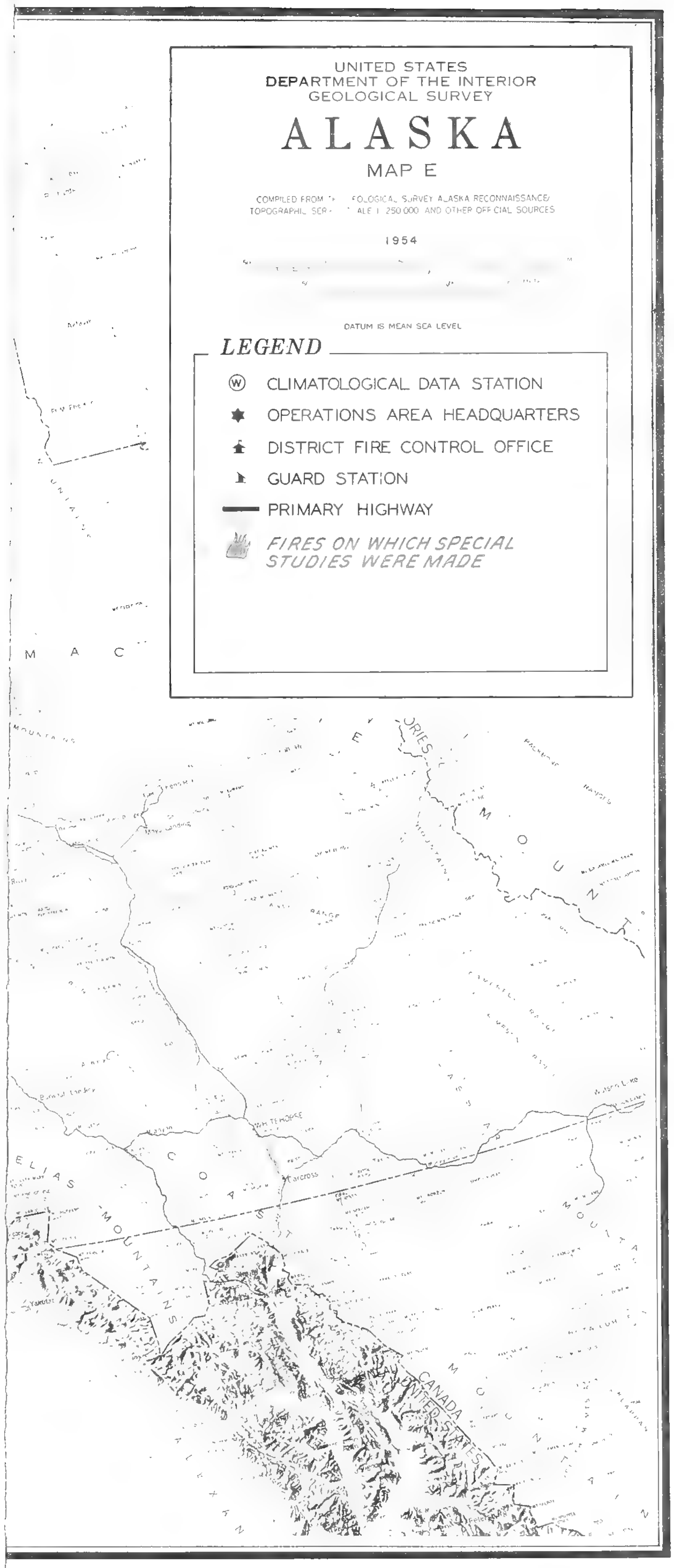
KENAI LAKE FIRE

Extremely steep and long, narrow canyons converging at the head of the lake cause strong winds that exhibit daily reversals in direction; 3,278 acres was burned on this fire, primarily as a result of these winds. Local night drafts could have been quite gusty and strong and from almost any direction during the time of the fire's rapid advance. The burning index, recorded at the lower end of Kenai Lake, climbed to 57 on the day of origin; this is critical for coastal Alaska.

Clearing fires from homestead preparation and right-of-way construction have caused hundreds of acres of forest land to go up in smoke over the past 5 decades. A right-of-way clearing fire in National Forest land along Kenai Lake was very small when discovered and first attacked on June 10, 1959. The point of origin was in a stand of white spruce where considerable moss was present; both the rate of spread and resistance to control were rated as high. By evening of June 13, the fire covered about 2,000 acres, extending along Kenai Lake for 7 miles and up a 75-percent slope for a mile or more. The major part of the fire burned in good quality black spruce timber. The fire had pretty well run out of fuel on the upper reaches of this steep mountainside, but it was burning at both the left and right ends. The condition of the fire at this time can best be described by quoting from the fire-behavior team's report:

> . . . the fire was burning at about 120 chains per hour. The fire was crowning in mostly black spruce timber with a northeast wind blowing at 10 miles per hour behind it. There were small spruce needles falling all over the ground as far as 2 miles ahead of the fire . . .

At 0800 on June 14, the 39 percent relative humidity and the 9 percent fuel moisture indicated afternoon burning conditions would be unusually bad. However, the fire made no particular big gains. Fair weather cumulus clouds were overhead from before 1600 until after 1800. At 1730 the wind shifted from a prevailing northeast direction to southwest, with a considerable increase in velocity. Line was lost at both ends of the fire and along the lakeshore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ALASKA
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OPERATIONS AREA HEADQUARTERS
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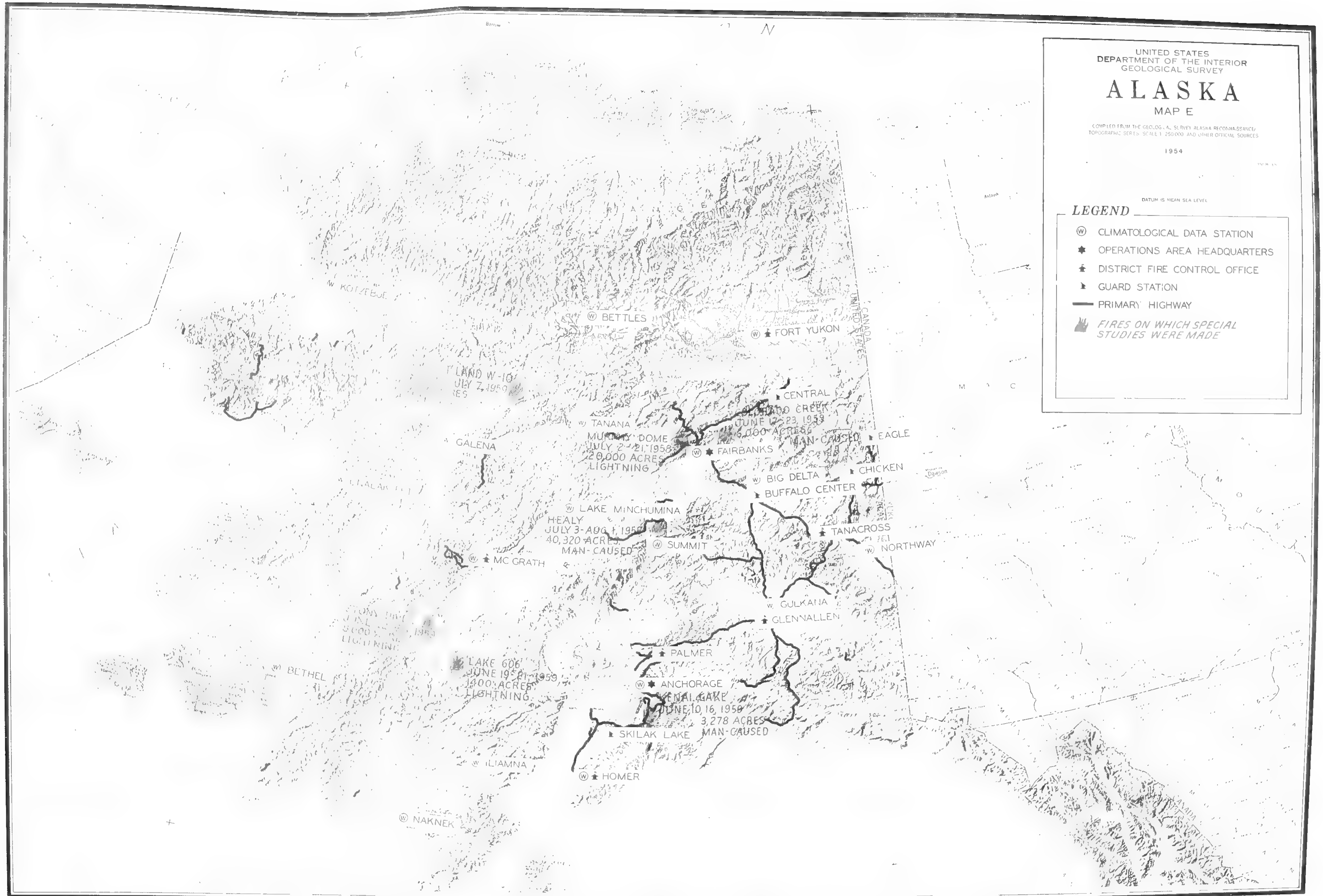
GUARD STATION
PRIMARY HIGHWAY
FIRES ON WHICH SPECIAL STUDIES WERE MADE
CANADA
UNITED STATES

Figure 60


UNITED STATES
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GUARD STATION
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N
KOTZEBUE
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CENTRAL
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MURPHY DOME
JULY 2-21, 1958
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LIGHTNING
FAIRBANKS
JUNE 17-23, 1959
6,000 ACRES
MAN-CAUSED
EAGLE
CHICKEN
BIG DELTA
BUFFALO CENTER
LAKE MINCHUMINA
HEALY
40,320 ACRES
MAN-CAUSED
SUMMIT
TANACROSS
NORTHWAY
MC GRATH
GULKANA
GLENNALLEN
PALMER
ANCHORAGE
LAKE 606
1400 ACRES
LIGHTNING
BETHEL
JUNE 10-16, 1959
3,278 ACRES
MAN-CAUSED
SKILAK LAKE
ILIAMNA
HOMER
NAKNEK

Figure 60

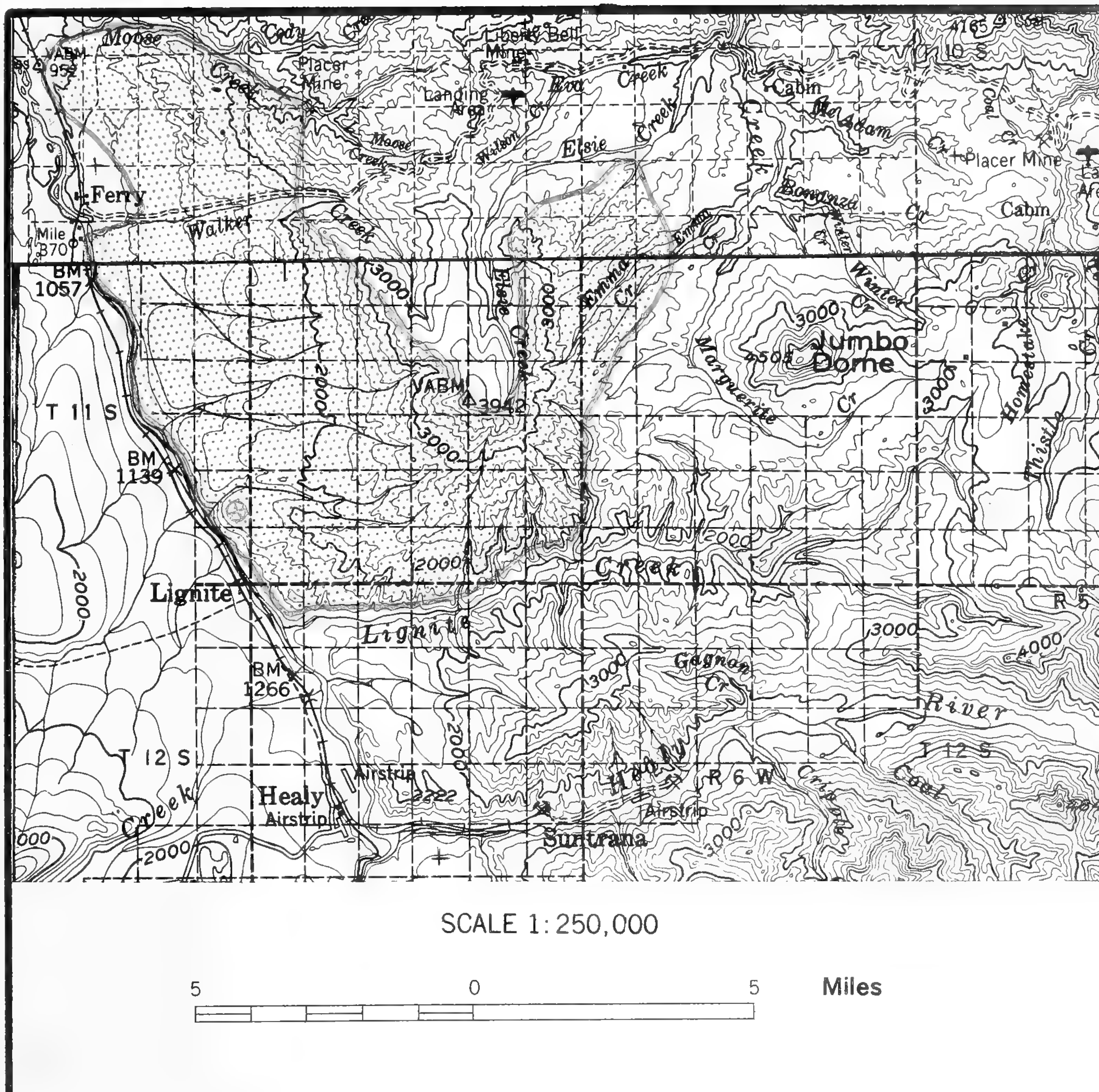


Figure 61. — Healy fire vicinity.

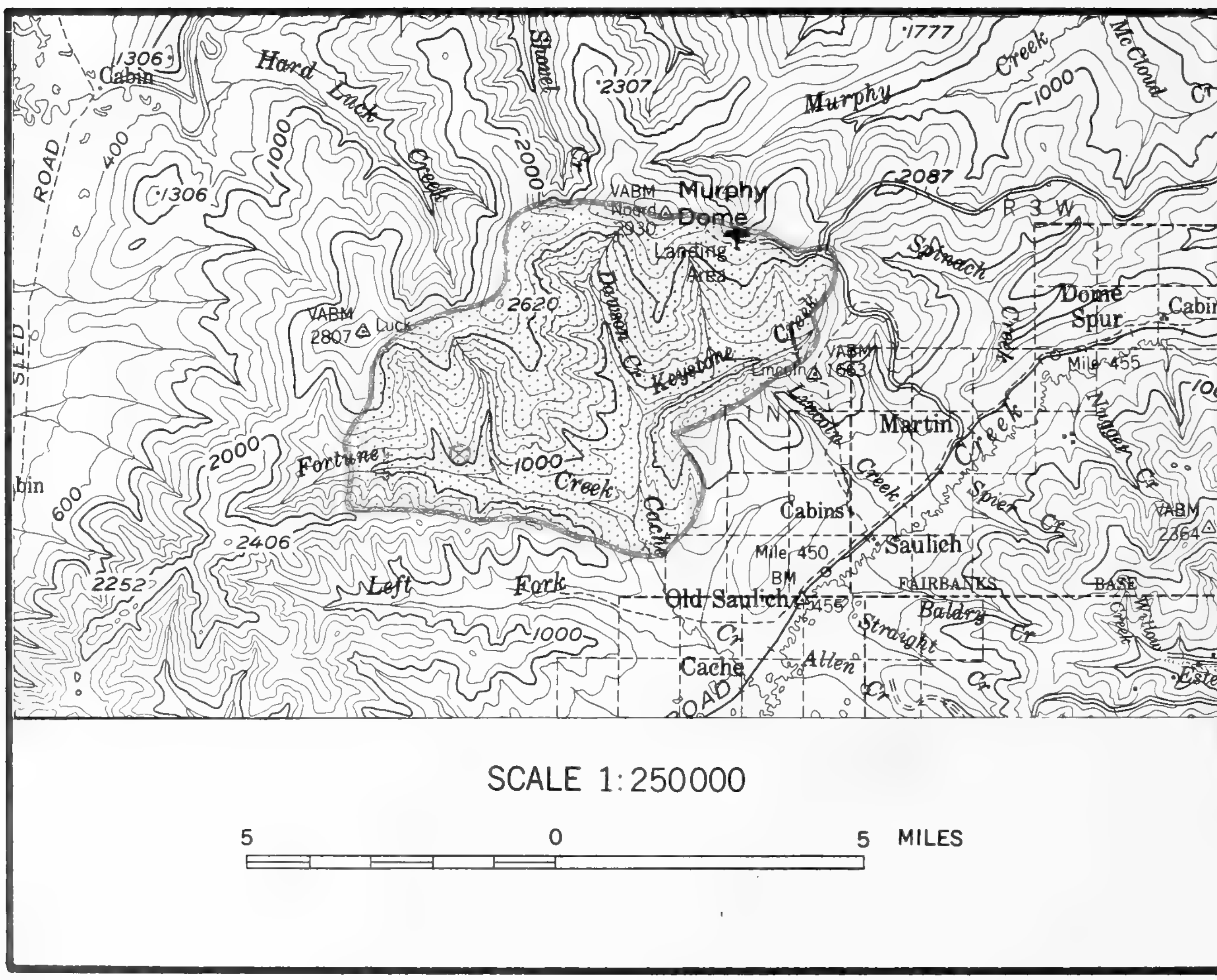


Figure 62. — Murphy Dome fire vicinity.

USFS

Figure 63. — Kenai Lake fire 1 year after it burned.

road, and many summer homes in the Snug Harbor vicinity were endangered. The fire became extremely active for a short while but slowed down as soon as the wind slackened. The wind shift on the fire may have been caused by a major shift in pressure patterns aloft; evidence for this might be the disappearance of small cumulus clouds from the area. A special fire-weather forecast could possibly have warned the fireboss that such a situation might occur.

This was the last significant advance of the fire; it was declared under control 2 days later.

COLORADO CREEK FIRE

Brisk winds, highly flammable fuels, steep topography, and unprecedented critical fire weather all contributed to the difficulties of predicting fire behavior and of taking adequate control measures on this 6,000-acre fire.

This fire is thought to have been set by an incendiarist on June 17, 1959. By early morning on June 18, 100 acres of muskeg had burned and burning was intense on each of the 3 days following ignition. Such critical fire-weather factors as those listed below were never before recorded in Interior Alaska:

Date	Fuel Moisture Stick	Fuel Moisture Slat	Temperature	Relative humidity
	Percent		Degrees F.	Percent
June 18	7.7	2.4	86	24
19	6.9	1.7		19
20	7.1	1.6	83	21

On June 18, a brisk gusty wind began by 0700 and persisted throughout the day. Before 1300, surface winds carried the smoke away near the surface; but after that time the column rose rapidly to extreme heights. Fair weather cumulus were present from 1300 on. By 1400 the fire was racing through muskeg at the rate of 60-chains-per-hour forward travel. Fast spread continued for about 2 hours.

On the morning of June 19 the sky was clear and wind speeded up to a maximum of 8 miles per hour. The fire jumped the control line and headed out at a rate of approximately 400 chains per hour. Black spruce became part of the fuel at the fire's head. The smoke column rose for several hundred feet, then flowed with the upper wind; however, as the day went on, the fire slowed down and the smoke column tended to toadstool; at this time the cirrus and

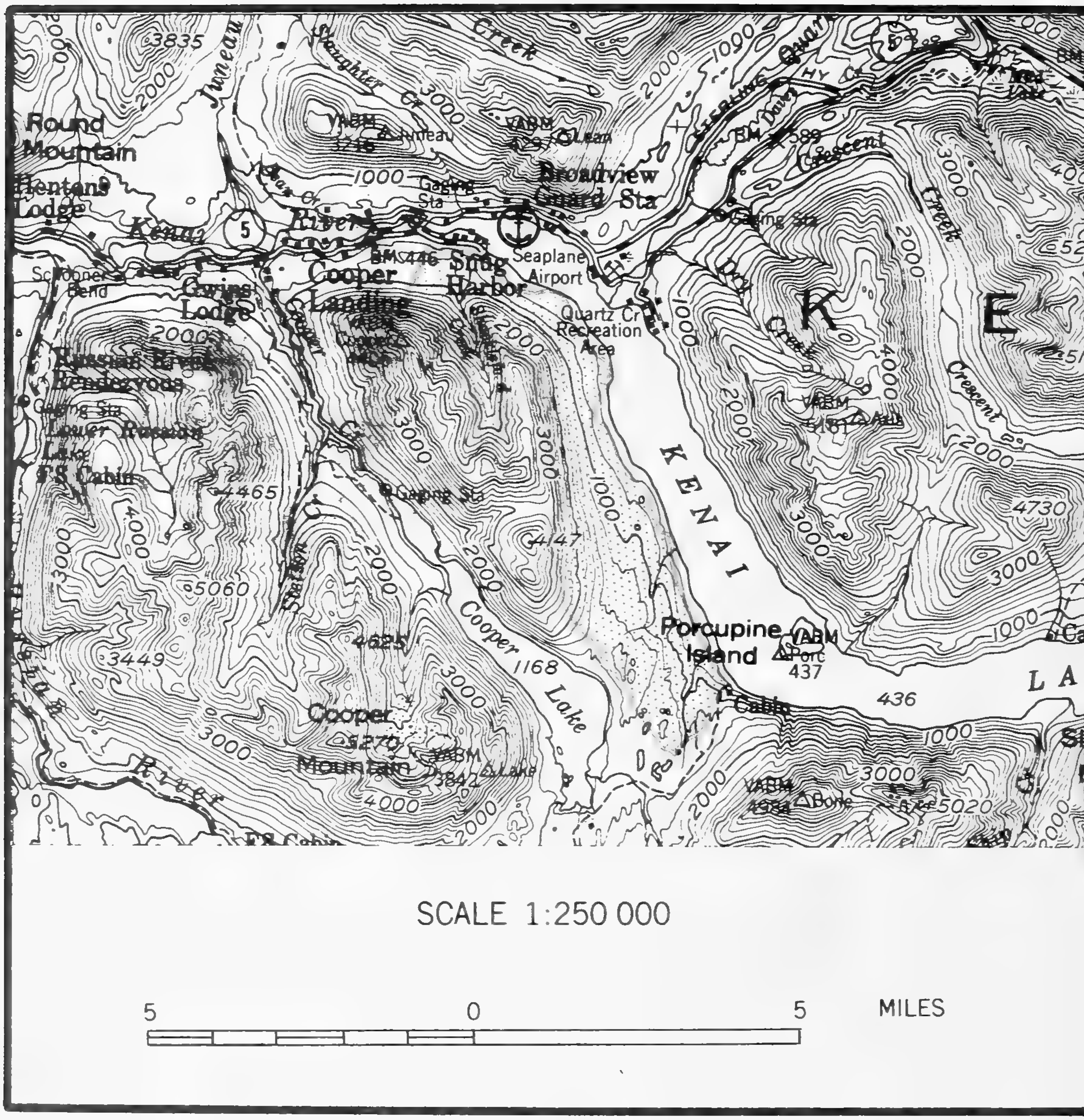


Figure 64. — Kenai Lake fire vicinity.

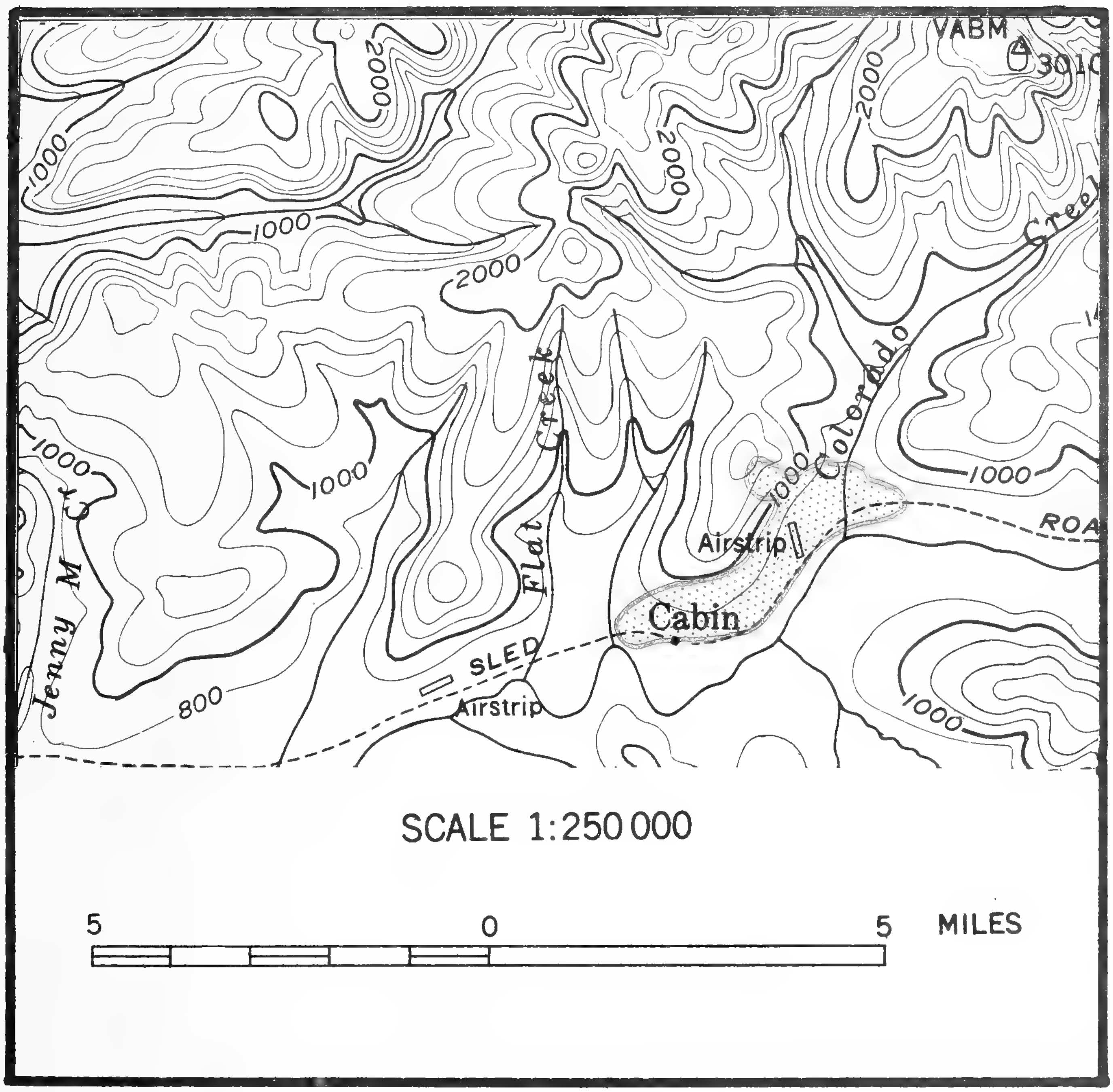


Figure 65. — Colorado Creek fire vicinity.

fair weather cumulus clouds did not appear to have much movement.

June 20 was another bad day. Altocumulus castellatus clouds (often a forerunner of thunderstorms and unstable air) were noticed from midnight until about 0900, but no cumulus development beyond fair weather stage followed. At 0800 altocumulus lenticularis appeared and the wind increased. At 1100 the fire jumped a wide control line and raced up a 90-percent slope through a black spruce stand at a rate of 140 chains per hour. After it burned out the large patch of black spruce it crept slowly in the surrounding birch stand. This midday action was the last period of rapid spread; the fire was declared under control by midafternoon June 23.

The entire 3-day period of record was characterized by temperatures about 10° F. above normal. Wind direction was predominantly from northeast on June 18, east on June 19, southeast on June 20, and east again on June 21. Average cloud cover was 0.7. Gusty winds caused some of the rapid advances by whipping backfires across the control lines. Presence of lenticular clouds on June 20 indicated high winds aloft. These, coupled with the combination of the local general wind direction of southeast and the normal afternoon tendency of wind to flow up-canyon in the side draws, may have helped the fire take advantage of local highly flammable fuel concentrations and race through these at unexpected times.

LAKE 606 FIRE

Thunderstorm downdrafts were the apparent causes for short separate periods of vicious behavior of this fire, which burned over 1,400 acres.

The Lake 606 fire was thought to have been started by lightning on June 19, 1959. It was discovered the afternoon of June 20 by patrol plane and was estimated to cover 30 acres. Initial attack forces arrived in the early morning of June 21 and soon found two fires totaling 100 acres; these burned together at 1400.

Thunderheads persisted in the vicinity during that afternoon. Fuel moisture of the sticks and slats was 10 and 7 percent, respectively; maximum temperature was 76, and the lowest relative humidity was 44 percent. Wind was from the north or northeast except at 1600 and 1700, when it came from the southwest with increased gustiness and velocity, up to 25 miles per hour.

The fire-behavior team mentioned it was difficult at this time to tell which end of the fire was the head and which was the rear. To quote their 1600 report:

> About 1530 lots of unusual things started happening. The wind was very variable. It could sometimes change direction completely and sometimes it was at a standstill. There were some whirlwinds all along the fire line . . . The smoke was rising fast and extremely high, becoming a part of a big toadstool directly overhead. It was impossible to determine atmospheric conditions from where we were because of the smoke. We did hear thunder in the SE.

At 1700 the report continued:

> Between 1600 and 1700 we had a very unusual big blowup on the fire. The smoke was rising extremely high and forming a big toadstool directly over the fire. The fire was completely out of control, burning at rate of about 4 chains per minute (240 chains per hour). It only burned about 30 minutes at this rate. At 1640 it began to rain and about 1715 the wind began to let up. At the two places on the fire where most of the activity was taking place there was small black spruce and lots of brush. The fire was sweeping through the trees and leaving the tundra and grass to burn later. At 1645 lightning appeared in the SE.

Rain stopped the fire at 1,400 acres.

Atmospheric instability and thunderhead downdrafts probably contributed heavily to the extreme behavior of the fire. Black spruce also appeared to be very conducive to crown fire behavior.

Fires behaving as this one did can easily become "killers." To prevent such possible tragic events a better understanding of the "whys" must be learned, supervisory personnel on fires

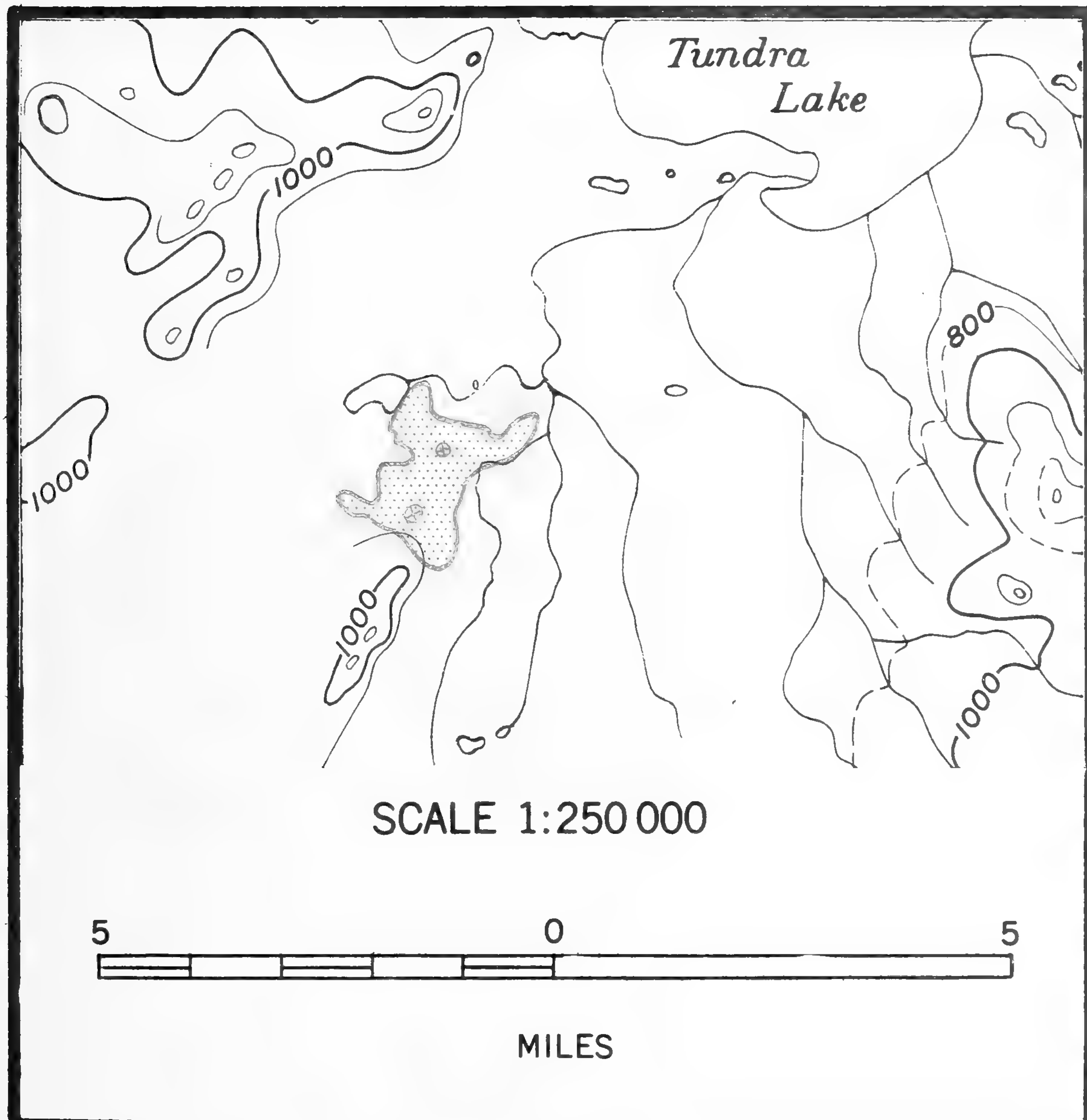


Figure 66. — Lake 606 fire vicinity.

must be trained to anticipate such behavior, and more reliable methods for prediction must be developed.

STONY RIVER FIRE

Unobstructed horizontal continuity of fuels had much to do with the rapid advance of this fire. Unexpected shift of wind direction and velocity could have resulted from mature cumulus clouds, but few were noted; possible passage of a frontal movement could also have contributed to the large final area of 8,000 acres.

The lightning fire started on June 22, 1959, and by the next afternoon it had spread to an estimated 5,000 acres.

The country was flat to rolling; surface weather conditions gave no outward indication of bad fire weather. The wind varied from 5 to 12 miles per hour and was gusty; but even so, the smoke column rose rapidly and formed a towering cumulus cloud. A change in the general atmospheric situation may have influenced a shift of wind at 1330 from northerly to southerly; the wind aloft caused crowning and a spread rate of 18 chains per hour. Towering cumulus clouds that were observed at 1315 could also have caused the wind shift and resultant fast spread. From 1550 until nearly midnight the surface wind blew from the west, but the clouds came from the southwest. In 9 hours' time the wind swung around clockwise about 270°. The greatest spread rate was 33 chains per hour at about 1700.

No extreme behavior occurred on June 24.

The fire spread both to the north and the south on June 25. Mature thunderheads developed by 0800 and persisted until noon, when only fair weather cumulus were reported. A trace of precipitation fell during each 2-hour period from 0800 through 1400; this indicated that thunderheads may have been present later into the day than the record showed. Winds were steady to gusty from 4 to 10 miles per hour from the northwest pushing the fire to the south, but at 1600 the wind shifted to a southwesterly direction and caused trouble on the north end of the fire. The smoke column first rose lazily and spread out gradually, but after 0900 the surface wind carried the smoke away before it rose. Locally u n s t a b l e atmospheric conditions may have accounted for most of the high rates of spread; fuel moisture, relative humidity, and burning index were mild all day. After June 25, the fire spread very little.

Coupled with a variety of weather conditions, the fuels — primarily black spruce — were capable of carrying the flame front with ease. The relatively flat rolling country with few obstructions also permitted the fire to travel unhindered.

From the limited information collected, it is hard to know whether the wind shifts were of local or general nature; however, upper air soundings at Bethel, 175 miles southwest of the fire, indicated a general southwesterly flow of air that was convectively stable at 1400 on June 24, in neutral equilibrium at 0200 on June 25; but at 1400 on June 25, layers of air were becoming convectively unstable.

The final area was 8,000 acres, about 5,000 acres of which burned on June 23.

HUGGINS ISLAND W-10 FIRE

Three major runs were observed on this fire. Steep slopes and heavy black spruce fuels were associated with all three. Brisk winds accelerated one of the runs, and thunderstorm cells influenced another. The fire was lightning caused on June 19, 1959, attacked on June 24 when it was already 4,500 acres, and abandoned on July 1. It finally burned out at an estimated size of 50,000 acres.

During June 25, both towering cumulus and altocumulus lenticularis clouds were present; some precipitation fell at 1630.

At about 2000 the fire, which had been crawling through tundra, reached a black spruce stand on a 75-percent slope and raced through it at about 90 chains per hour; the average spread for a whole hour was 45 chains. There was no special note of increased or erratic wind; no cumulus clouds were present; but the smoke column changed from rising lazily and spreading out, to being carried away by surface winds. This change in the smoke column characteristic may have been an important clue to the sudden rapid spread of the fire, but the changes in slope and fuel type were also pertinent to the cause. There might also have been a topographic influence on local wind flow at that time of day.

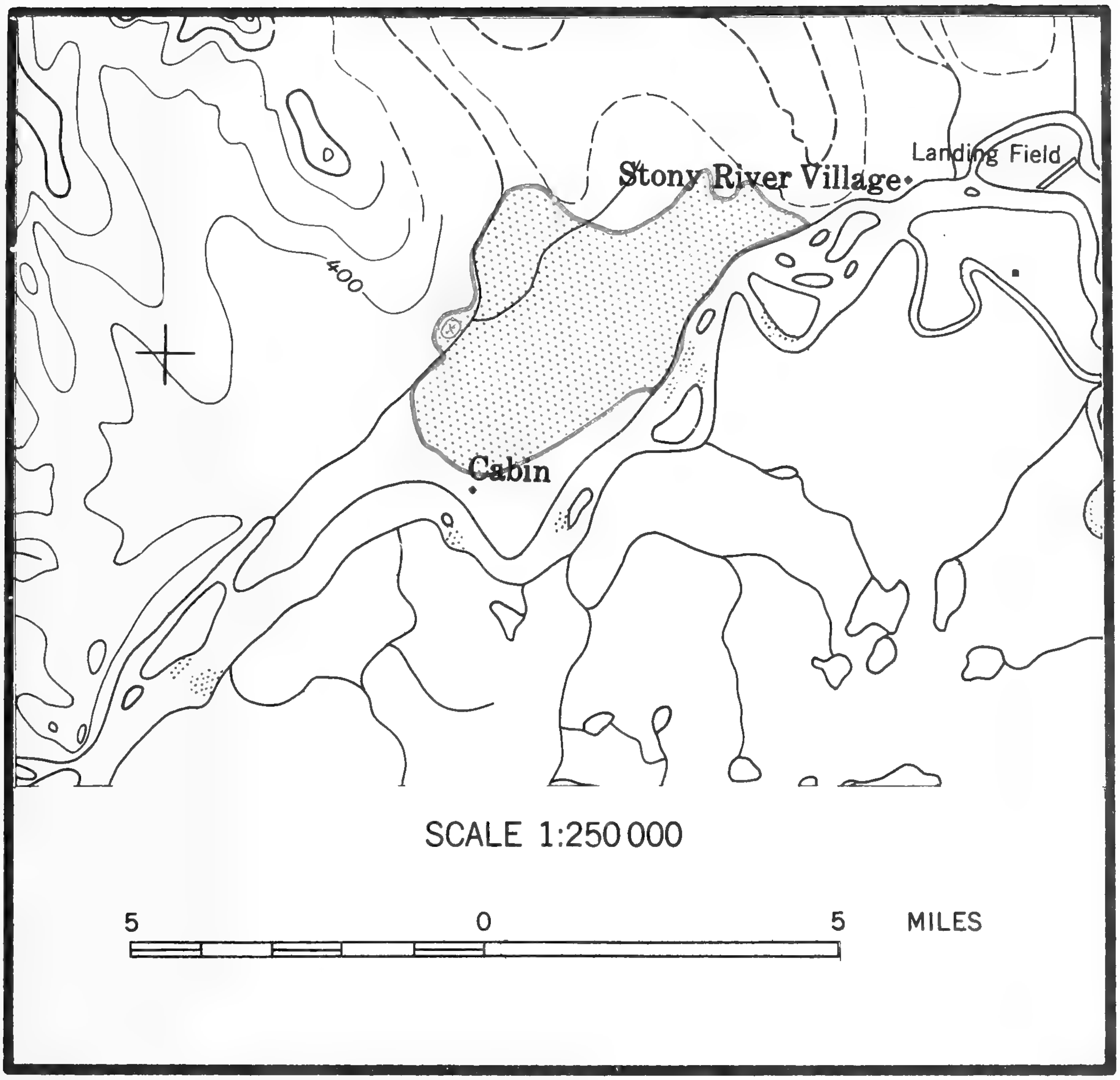


Figure 67. — Stony River fire vicinity.

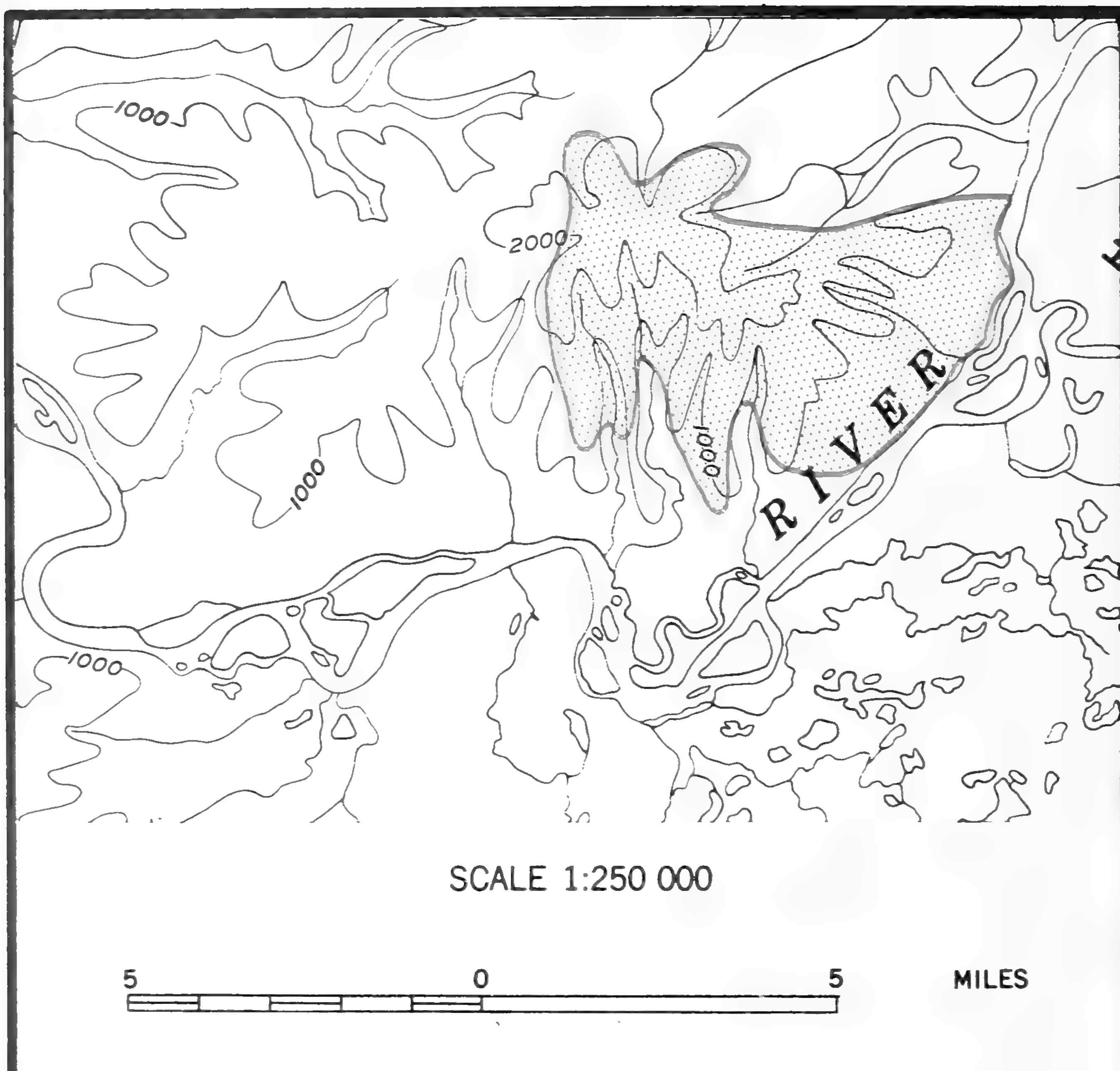


Figure 68. — Huggins Island W-10 fire vicinity.

On the morning of June 26, after a change from steady, light northeasterly wind to a variable wind, and under moderate fire-weather and clear-sky conditions, the fire began crowning at 80 chains per hour up a 75-percent slope containing black spruce. At 1000 all the weather conditions worsened, many dust devils occurred, cumulus clouds began to form, the smoke column rose rapidly and high, but the fire slowed to 20 chains per hour on a 35-percent slope, still in black spruce. The wind was now from the north and continued there all day. The fire continued to advance but not with extreme behavior characteristics.

At 1600, however, to quote the fire-behavior report, "A whole north-south wall of flame is moving west over a ridge at a fantastic rate — possibly a good 5 miles per hour. No warning — the whole ½ mile of flame started within 3 minutes." The smoke column continued to rise for some distance, then toadstooled. There had been no noticeable weather, fuel, or topographic change (21- to 50-percent slope) to cause this erratic behavior; however, the 1800 observation mentions fully mature thunderheads with virga in the vicinity. Maximum wind velocity at the weather station, though, was only 11 miles per hour. At 1930 the wind shifted from north to southeast, the fire subsided and remained quiet during the night. The fire was now about 13,000 acres in size.

Since the available firefighting crew was so small and the extended period of fire weather was so adverse, the fire was finally abandoned in late evening on July 1. More complete weather observations and intensive study of the atmospheric conditions might have led to a better explanation of the fire's rapid spread.

SUMMARY

Topography to windward of the Healy fire forms a saddle through which wind velocities are usually greatly increased. This fact is the major reason for the fast spread and difficult control of the fire.

The broken topographic complex on the lee side of a broad flat valley, high burning index, thunderstorms, and instability all contributed to the irregular and difficult time for predicting behavior of tne Murphy Dome fire. One day the fire spread for several hours at a rate of 40 chains per hour.

Topography surrounding the Kenai Lake fire vicinity is extremely rugged and consists, in part, of steep canyons converging on the upper end of the lake. The resultant strong diurnal winds reverse their direction in morning and evening; altered atmospheric conditions also violently affect the wind pattern. The diurnal effect caused serious trouble on one day, and a front moving through caused considerable loss of line on another day.

The worst fire weather of all the fires reported here occurred on the Colorado Creek fire. The brisk winds that were altered by steep topography, highly flammable fuels, and generally critical fire weather all contributed to the difficulty of predicting fire behavior and taking appropriate control measures. A spread of 140 chains per hour in black spruce was recorded for a brief period.

The initial run of the Lake 606 fire was caused by strong winds. The greatest spread, however, was apparently caused by thunderstorm downdrafts and unstable atmospheric conditions.

Constant rapid spread of the Stony River fire was aided by unbroken horizontal fuel continuity and relatively unstable air associated with a frontal activity which changed the wind direction a total of 270 degrees. The fire traveled at a rate of 33 chains per hour at times.

Thunderstorm downdrafts may have caused a ½-mile section of the Huggins Island W-10 fire to advance briefly at a rate of 320 to 400 chains per hour. A local wind-topography-black spruce fuel situation may have caused another rapid advance of 45 to 90 chains per hour. A wind switch accompanied by local instability accounted for still another advance rate of 80 chains per hour. Rough topography, variable and gusty surface winds, evidence of high winds aloft, and local atmospheric instability all contributed to periods of extreme fire behavior.

From these case histories very few specific conclusions can be drawn. However, for the first time some systematic measure was made of the weather, topography, and fuel conditions during actual free-burning periods of wild fires in Interior Alaska. The results point up these things: (1) Most wildfire activity can be measured and explained; (2) more sophisticated methods will in the future add quantitative information to the predominantly qualitative data recorded in this study; and (3) the groundwork has been laid for answering the four questions at the beginning of this chapter.

CHAPTER 8
FIRE CONTROL

Timber losses have approximately balanced timber growth in unexploited Interior Alaska. Future demand to harvest part of the crop each year will require an increase in net growth to replace this removal. Besides, the national economy will demand a continuing increase in the future allowable cut.

How much should be spent to protect this important resource? Where is the breaking point between the ratio of loss and damage versus the cost of protection? No economic study has been made to ascertain just how much Alaska is worth in terms of what should be spent to protect it. Helmers (1960, p. 470) states, "Fires are so much a part of the summer scene that there is also the psychological problem of getting public recognition of the economical losses due to fire." A close review of the history of our resource protection effort and a good look at long-range needs show the necessity to materially reduce forest fire damage in Alaska.

Until July 1939, organized forest fire control in Alaska was nonexistent. Then the territory received $37,500 to establish the Alaska Fire Control Service. Early efforts were confined to suppression of man-caused fires within surface striking distance of Anchorage and Fairbanks.

Throughout development of an effective firefighting force, several major problems have persisted. The vast area and the contrastingly small, concentrated population have made early detection difficult; the lack of access to remote forest and range lands compounds the logistics of reaching fires and supplying crews. As tourist numbers increase, so does incidence of man-caused fires. An increasing awareness of the values at stake and of the need for better protection has mandated the fire control organization to use every means available to reduce the losses (Robinson 1960).

Since inception of the Alaska Fire Control Service, great strides have been made toward control of the major portion of forest fires in Alaska. Begun under the old General Land Office, the fire control organization is now operated as an integral part of the Bureau of Land Management, which has responsibilities for protection and management for more than 95 percent of the State's area. Protection of much of this land will remain the responsibility of the Bureau of Land Management for years to come even though the State will, within 25 years, assume title to more than 100 million acres.

In 1955 the Bureau of Land Management developed a comprehensive forestry program for Interior Alaska. The four major management objectives are: (1) multiple use management of the entire forest resource complex rather than timber management alone, (2) water resource protection and development, (3) increased utilization and development of the present timber resource, and (4) protection of the public's vested interest in the forest and range resources in Alaska from destruction or damage from fire, insects, and disease. None of the first three management objectives can be met with confidence until the fire protection organization can assure, within reasonable limits, a continuing forest cover. Robinson (1960) proposed a goal of not more than 100,000 acres of burned area per year. Basic barriers to early detection, attack, and control of fires must be identified and overcome.

FIRE CONTROL ORGANIZATION
PRESUPPRESSION

Regardless of the severity of any one fire season, a well-developed fire control organization containing basic personnel and equipment must be ready to handle an average bad season. Perhaps the job confronting fire control personnel for Interior Alaska can best be described by comparing it with another fire control group, Region 1 of the U.S. Forest Service:

	Region 1 USFS[1]	Interior Alaska BLM	Interior Alaska compared to Region 1
Acres protected	32,000,000	225,000,000	7 times
Acres burned	4,467	1,119,130	250 times
Number of fires	1,069	254	25 percent
Number of fires per million acres	33	1.1	3 percent
Fire personnel, man-years[2]	348	38	11 percent
Number people per square mile	4.9	.4	8 percent

[1]Montana, northern Idaho, northwest South Dakota, and northeast Washington.

[2]Regularly assigned positions including fire control aids.

Bases and Warehousing

Major operational bases and warehousing facilities are at Anchorage and Fairbanks, the only two cities capable of furnishing manpower, food, equipment, supplies, and services necessary for launching and supporting fire crews in the field. These are augmented by a few secondary permanently manned bases located at strategic support centers. In addition, several fireguard stations, manned seasonally, are situated from Skilak Lake on the Kenai Peninsula northward to Fort Yukon just north of the Arctic Circle.

The long time required to deliver many supplies (retardant chemicals for instance) makes it imperative to anticipate such needs as long as one season ahead of expected use.

Most equipment, tools, and supplies are packaged and stored in six-man units — a Grumman Goose load of firefighters. Development of new tools and equipment for fighting fires in the Alaskan fuel complex has lagged seriously. Dozers, tankers, and pumpers are used where available and where topography and soil along the fireline permit. Shovels and pulaskis are the old standbys for handtool work. New hand and power tools are urgently needed to help offset the relative scarcity of personnel, the difficulty of terrain, and the remoteness that gives fires such a headstart.

Dispatching

Most dispatching of men, equipment, and materials is handled at Anchorage and Fairbanks. Nearly all smokejumping and a major part of retardant chemical attack operations are controlled from Fairbanks. Dispatching involves considerable advance planning, preparation, and training. Even pilots of the contract retardant planes require orientation and training by the dispatcher staff. All aircraft use is controlled by the dispatcher and chief pilot in order to attain greatest value from each plane.

Effective dispatching depends upon a highly reliable communications system. Trunkline telephone service is excellent, but is limited to the large cities and to a few places of habitation along the main highways. All other communications are by radio. Airplanes need the most complex set of equipment as pilots depend on radio for navigation and safety as well as for tight control on fire missions. All stations and a large share of vehicles are radio-equipped: VHF-FM for air-ground work; VHF-FM and HF-AM for vehicle and station use.

Deployment of men and equipment during the fire season must be based upon information about fire occurrence. Since a large percentage of man-caused fires occurs in May and early June, men, tankers, dozers, and other ground equipment are aimed at control of fires near habitation centers and areas of agricultural development. Later, all the aircraft — whether for patrol, smokejumping, chemical attack, or supply — must be in constant readiness to attack lightning fires anywhere in the State.

Manpower

The supply of manpower in Alaska is small, and the distribution in respect to recruiting firefighters is poor. Even though Alaska's population has increased fourfold in the past 40 years, the 1960 census records a total of only 226,167 persons (four-fifths the population of Nevada). The tabulation below shows the uneven distribution of people; only about 100,000 persons reside outside of the Anchorage and Fairbanks vicinities, and many of these are in the southeast coastal area.

Climatic division	Geographic division	Approximate population
Maritime zone	Southeast, South Coast, Aleutians	56,000
Transition zone	Copper River, Cook Inlet, Bristol Bay, West Central (includes Anchorage)	106,000
Continental	Interior Basin (includes Fairbanks)	49,000
Arctic zone	Arctic Drainage	15,000

A small part of the regular fire control personnel are year-round employees, but most of the fire dispatching and overhead employees are seasonal. Most of them enter duty in April or May and remain until September. They are the well-trained nucleus that leads the attack on fires throughout the summer.

The actual firefighters come from two sources — Indian villages and the open labor market. The natives and Eskimos are excellent firefighters. Their villages are sufficiently scat-

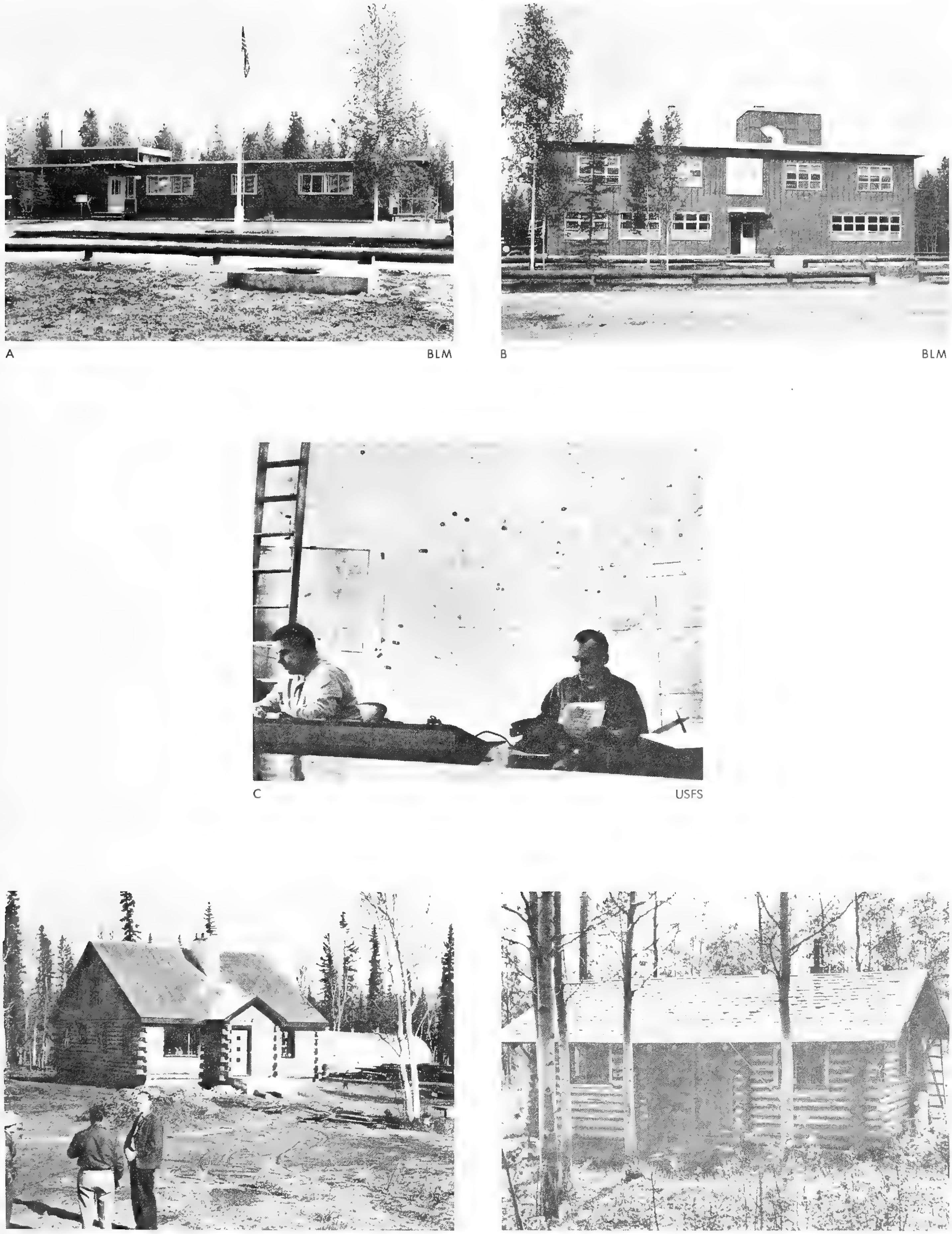


Figure 69. — Base facilities: A, fire headquarters, Fairbanks; B, smokejumper center, Fairbanks; C, dispatch room, Fairbanks; D, McGrath station; E, Skilak Lake guard station.

tered so that groups are often close to fires and can be recruited rapidly for early attack. They learn quickly and fit well into fireline organization. Also, they are physically able to stand backbreaking work for many days at a time. The pickup firefighters from the open labor market are of similar caliber to those found anywhere else; however, a few of them do return season after season and become topnotch workers.

Successful in western United States since World War II days, smokejumping began in Interior Alaska in 1959 with 16 jumpers. Setting up a smokejumper center in Fairbanks was a major undertaking. Everything from a loft-dormitory building to sewing machines, from acquiring a DC-3 to modifying the doors of a Grumman Goose had to be done to make the jumper force effective. Retraining dispatchers in new procedures and transportation methods was also necessary. Well-executed presuppression work in this new phase of fire control paid off when the actual suppression load began to increase.

Transportation

Of Alaska's 5,000 miles of highway, 3,000 are blacktopped, 2,000 are graveled. Private access roads go into homesteads, mining property, and recreational sites, but the actual mileage of these roads is very small. However, since most man-caused fires are along the highways or on homesteads (fig. 57), a far greater number of trucks, pickups, and tankers is used than one would suspect by looking at road data alone.

Aircraft are the hard core of the firefighting attack force. As one official put it, "The possibility for successful fire control started the day we received our three Grumman Gooses." These short-field amphibious planes can land on small lakes or sloughs close to fires; hence they are constantly used for patrolling, servicing and supplying, making initial and reinforcing attacks, and for smokejumping. Single engine, 4-place planes are kept busy on patrol, scouting, inspection, and administrative use. A Douglas C-47 (DC-3) is used primarily for smokejumpers; but it can also move equipment, supplies, and nonjumping firefighters. A P-51 fighter plane carries the observer for long-range detection and scouting; it is also used as lead plane for chemical retardant attack.

Charter and contract planes carry all the overload while the fire season is in full swing. At the peak of the season, one sees the usual assortment of larger chemical retardant application planes, several makes of helicopters, and both wheel and float type planes of the single engine, 4-place category. The numerous Alaskan commercial airlines furnish much of the heavier point-to-point hauling.

When fire conditions become critical and commercial equipment is no longer available, the military forces contribute many hours of flying. Heavy point-to-point hauling is done by planes in the C-123 class; helicopters — even the large double-rotor type — often do yeoman duty during crucial times.

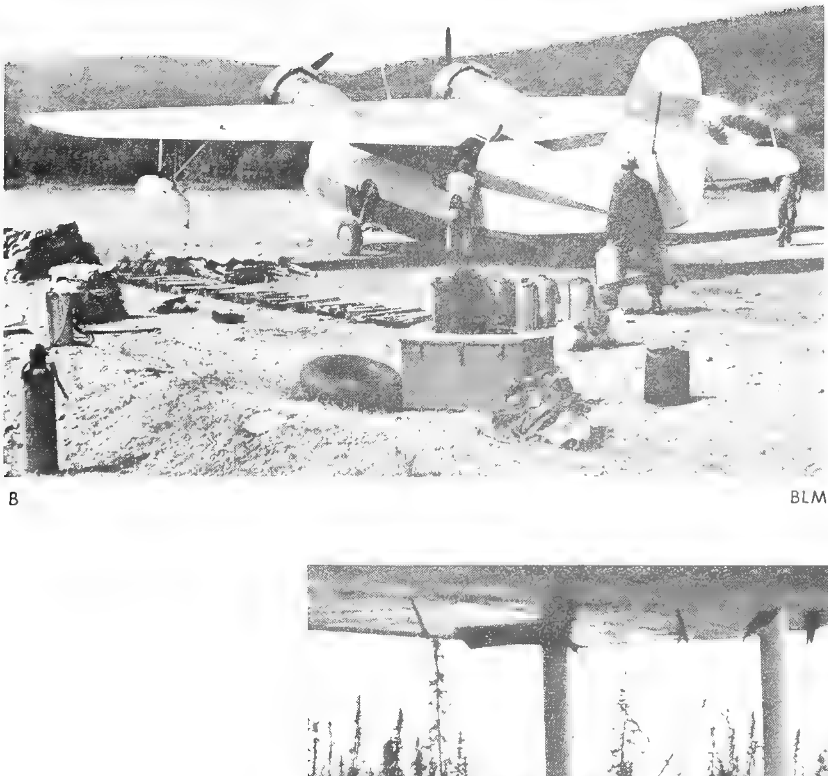
DETECTION[9]

The critical need for early detection of fires has been emphasized several times. A small crew can usually (not always by any means) handle a fire if they can attack before it begins to take over its own destiny. Prior to about 1957, aerial detection was limited for a practical reason: The attack force was not large enough to act on more than a small percentage of the fires; so there was no point in detecting all the fires that did start. The advent of retardants and smokejumpers now makes early detection of *all* fires imperative if these two new weapons are to be of maximum value.

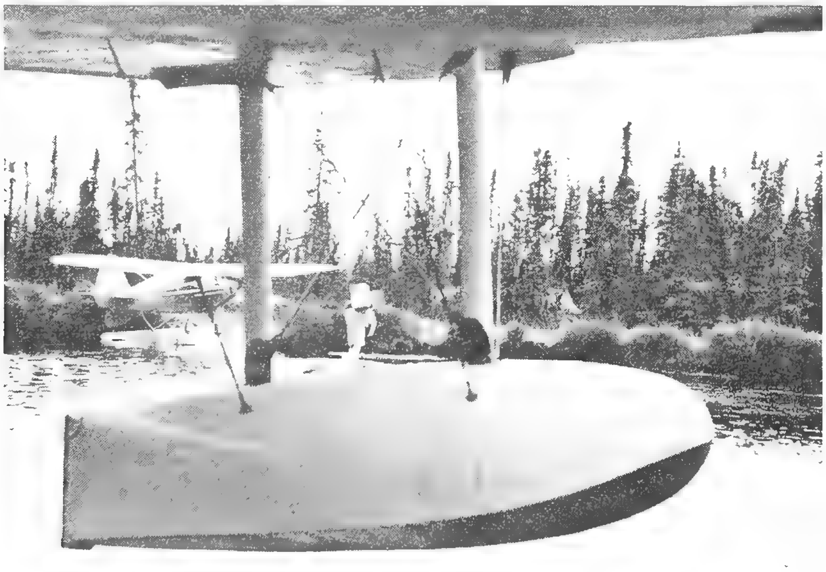
All the means of detection credited above are somewhat haphazard, and at best are a poor substitute for a continuous, trained detection organization. The Bureau of Land Management has, since 1959, chartered a P-51, Mustang fighter plane to follow in the wake of thunderstorms in order to locate possible resultant fires. This procedure has helped early detection of many fires, but it has certain serious drawbacks: One plane cannot adequately patrol 150 million acres (the area of Montana and Idaho combined); an observer cannot locate all small fires from a fast-moving, high-flying plane; accurate

[9]Statistical analysis of time elapsed between origin of fires and their discovery proved unsuccessful because too many data were lacking on the fire reports. Only about one-third of the large (Class E) fires could be used; this fact presumably influenced the results to show that longer lags in discovery time did not result in larger fires. The question will have to remain a matter of conjecture until factual data are collected on the behavior of free-burning fires from the time of origin.

A USFS



B BLM



C USFS

Figure 70. — Transportation: A, foot travel is slow, often impossible; B, loading a Goose for fire run; C, air supply — Goose to small float plane.

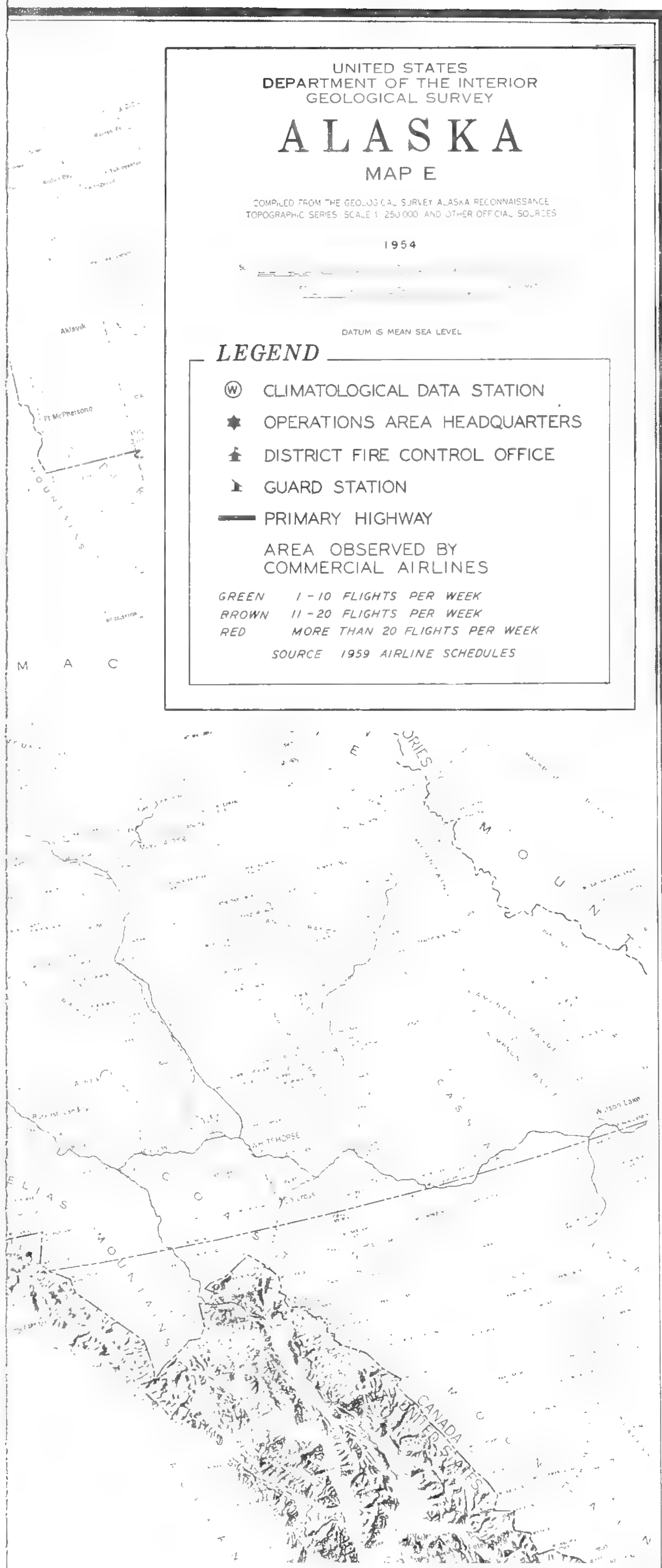
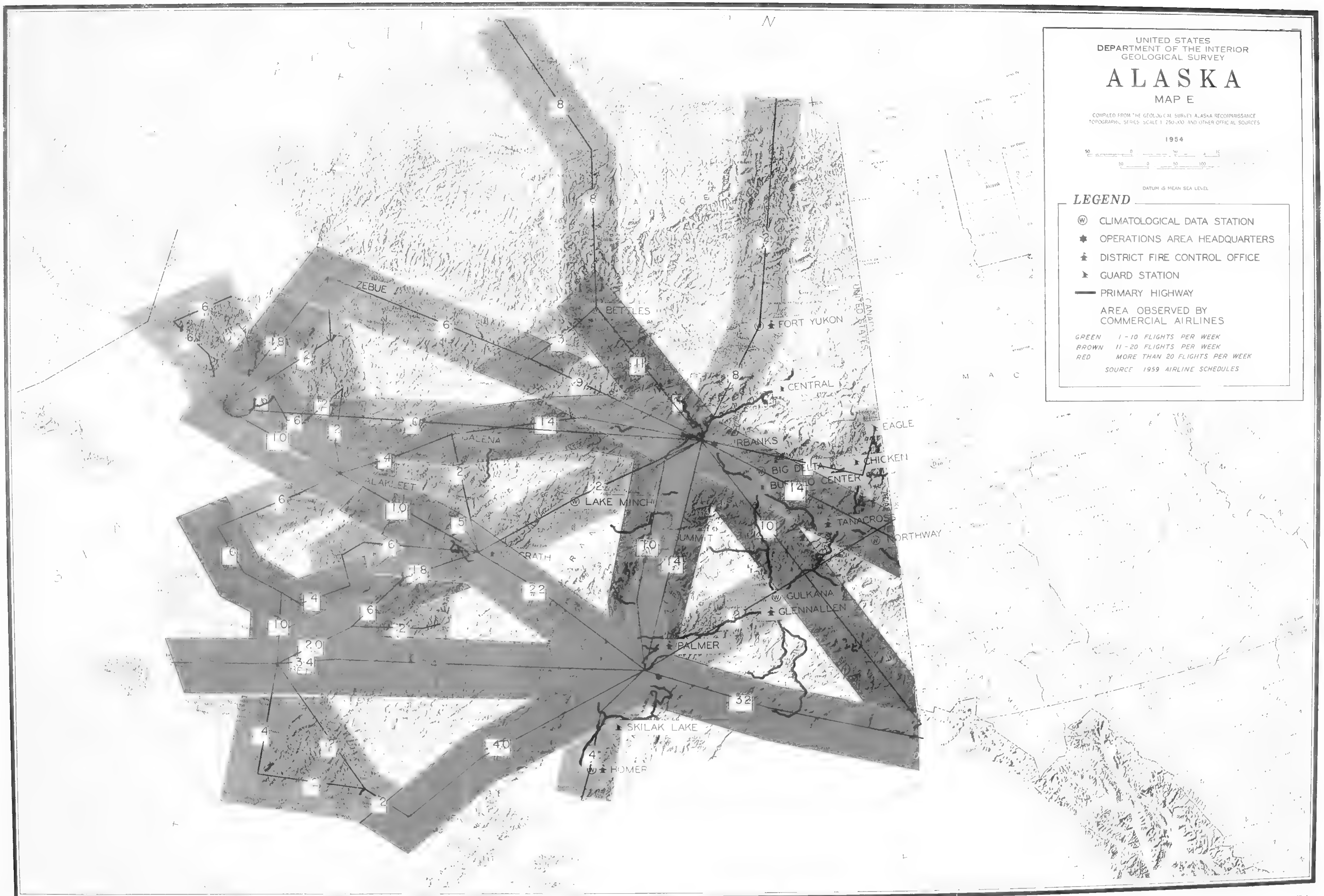

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
ALASKA
MAP E
1954
DATUM IS MEAN SEA LEVEL
LEGEND
CLIMATOLOGICAL DATA STATION
OPERATIONS AREA HEADQUARTERS
DISTRICT FIRE CONTROL OFFICE
GUARD STATION
PRIMARY HIGHWAY
AREA OBSERVED BY
COMMERCIAL AIRLINES
GREEN 1 - 10 FLIGHTS PER WEEK
BROWN 11 - 20 FLIGHTS PER WEEK
RED MORE THAN 20 FLIGHTS PER WEEK
SOURCE 1959 AIRLINE SCHEDULES
CANADA
UNITED STATES

Figure 71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RED MORE THAN 20 FLIGHTS PER WEEK
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EAGLE
CHICKEN
BIG DELTA
LAKE MINCH
TANACROSS
NORTHWAY
SUMMIT
GULKANA
GLENNALLEN
PALMER
SKILAK LAKE
HOMER
UNITED STATES
CANADA

Figure 71

BLM

Figure 72. — Early detection of this small lightning fire will contribute to rapid control.

description and location of current thunderstorm cells or systems is not yet feasible; and, because of its speed such a plane is often diverted from its primary detection mission to be used for reconnaissance of going fires and for lead plane duties on retardant chemical attacks. The lighter planes which are also used occasionally for patrol are dispatched to lead plane duty whenever possible to permit the P-51 to continue its reconnaissance work.

Recent advances in development of electronic devices may make it possible to provide a reliable system for tracking storms, locating fires, and mapping going fires. Certain types of radar can identify mature thunderstorm cells. Sferics receivers are being developed to further determine whether an electrical disturbance is present (Battan 1959). Airborne infrared mapping devices are now being investigated for use in the actual locating and mapping of fires (Hirsch 1962).

SUPPRESSION

Preparation for an expected bad fire season in Interior Alaska is a tremendous job, but it must be done thoroughly so that the subsequent suppression effort will be adequate.

Method of Attack

Fire control tactics in Interior Alaska are similar to those used elsewhere. Logistically, attack on fires accessible to motor vehicles is relatively simple. Initial attack on fires hundreds of miles from the source of supply requires ingenuity and wise use of every facility feasible. Except for longer time and distances involved, the following procedure follows closely those used in other States: As soon as a fire is reported, the dispatcher sends chemical retardant planes. At the same time he dispatches smokejumpers. Then, ground forces are sent to reinforce and relieve jumpers. Their travel may be by land plane to a small field, thence by amphibious plane to a body of water near the fire, and possibly by helicopter to the fireline. Subsequent loads of chemicals for tactical support are often ordered when conditions indicate the need.

As an example of the effectiveness of this type of rapid attack, some 1959 statistics follow: Of all fires upon which retardant was dropped, 35 percent was within 50 miles of the base, 43 percent between 50 and 100 miles, and 22 percent between 100 and 200 miles; an average of seven loads was dropped on each fire by planes traveling a mean one-way distance of 85 miles. The application of chemical checked the fires' spread to an extent that firefighters controlled 85 percent of them at the same size class as when the retardant was applied.

Smokejumpers in 1959 traveled as far as 472 miles to reach fires, but the average distance was 250 miles. Jumpers controlled 36 fires with an average force of five men per fire, and controlled 94 percent of them within the same size class as when attacked.

Distance Traveled to Fires

Analysis of individual fire reports showed only the following general relationships between distance traveled according to final fire size, and whether action was taken: Fifty-six percent of all reported fires occurred within 100 miles of headquarters. Sixty percent of action fires occurred within 100 miles compared to only 20 percent of those on which no action was taken. Only 12 percent of action fires occurred at distances greater than 200 miles compared with 39 percent for no-action fires. One-third of the fires larger than 300 acres are farther than 200 miles away from headquarters. More than two-thirds are farther than 100 miles away. This situation will always prevail simply because it takes

Table 16.—**Percent of fires controlled within each class of time lapse from initial attack by final size class**

(Av. 1950-58)

Final size class	Time lapse (hours)								
	0-1	1-2	2-3	3-6	6-12	12-24	24-48	48-72	72+
	Percent								
A	73	12	5	8	1	[1]	[1]	[1]	0
B	31	17	13	16	8	8	4	1	2
C	11	8	9	23	19	12	8	3	7
D	3	5	13	10	22	16	13	5	13
E	1	1	2	5	11	11	16	12	41
Av.	30	11	9	14	10	8	6	3	9

[1] Less than 1.0 percent.

longer to go greater distances. But when greater distance from headquarters is coupled with longer time between fire origin and detection, only larger fires yet can be expected. Again reduction of detection time would far more than pay its way.

Time From Attack to Control

Table 16 based on records of 986 fires confirms what one would expect to be the relation between the length of time required to control a fire and the final size of the fire; namely, the longer it takes to bring a fire under control, the larger the final acreage will be.

Figure 73. — Such large fires are difficult and expensive to control.

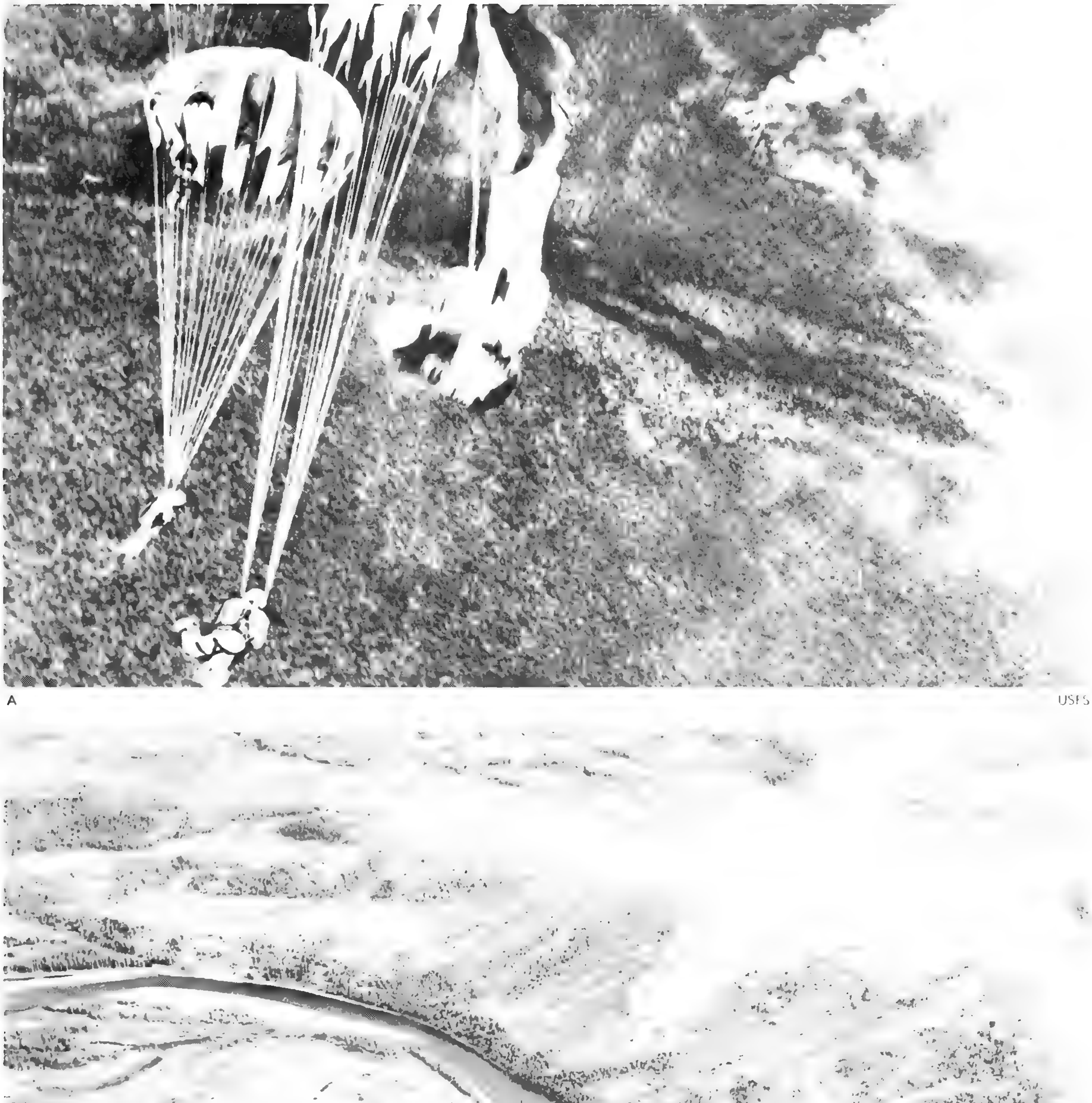

Figure 74. — Aerial fire attack: A, smokejumpers drop on Christian Village fire, 1960; thin diagonal line in upper right is strip of retardant; B, timely jumper attack may assure early control.

A BLM

B BLM

Figure 75. — Fighting fires: A, handline construction is still the mainstay; B, military equipment assists in emergencies.

The number of extra-period fires measures two things — effectiveness of the fire control organization, and severity of the fire season. An extra-period fire is one not controlled by 10 A.M. of the day following *discovery*. The BLM fire report data allowed only the following approximation to be attained: a fire not controlled within 24 hours from *initial attack*. With this in mind, the figures comparing Interior Alaska (1950-58) with Region 1, USFS (1954-60) are remarkably close.

Size of fire	Ratio of extra-period fires to total number of fires	
	Interior Alaska	Region 1 USFS
	Percent	
10 acres or less	4	6
More than 10 acres	36	35

However, if the Alaska data were based on the time between discovery and control, the percentage of extra-period fires, for the larger fires at least, would certainly be much greater in Alaska.

Forward Behavior of Fires at Time of Attack

The importance of early attack is illustrated in table 17. Usually fires with large final size are more violent in behavior at time of attack than small ones. Outstanding extremes in the spruce type are indicated by the fact that 70 percent of Class A fires are smoldering when attacked, but 47 percent of Class E fires are crowning when attacked. If fires could be reached while still small and before they start to run, the total control effort would be considerably lessened, as would also the loss and damage. That goal can never be completely reached, as some fires may begin running and crowning almost immediately after they start; however, this information about behavior must be kept in mind as an important factor in both fire control planning and dispatching.

Table 17.—**Forward behavior of fires in spruce type at time of initial attack by percent within each behavior class and by size classes**

(Av. 1950-58)

Final size class	Behavior				
	Smoldering	Creeping	Running	Spotting	Crowning
			Percent		
A	70	31	12	25	7
B	19	39	41	25	17
C	6	18	22	19	19
D	2	5	5	12	10
E	3	7	20	19	47

FIRE AS A MANAGEMENT TOOL

Use of fire in forest management is at times a controversial issue, but many protection and silvicultural objectives that could not be attained economically by any other means are being achieved through proper use of fire. Helmers (1960, p. 467) states, primarily in reference to southeastern Alaska, but possibly for many parts of Interior Alaska:

The possibility that fire can be used for silvicultural purposes is pure conjecture at this time. However, there is a need for reduction in slash volumes to reduce the physical impediment to regeneration as well as to reduce the fire danger in newly regenerated cutting. The seedbeds in cutover areas can be improved to advantage. These factors alone make controlled use of fire a tool worth investigation.

A USFS

B USFS

C USFS

Figure 76. — Use of fire: A, slash hazard, Kenai Peninsula; B, timber resource suffers from poor planning; C, example of current practice of windrowing slash resulting from land-clearing operations.

Lutz (1960) recognizes that fire properly used can, even in boreal forests, become a valuable silvicultural tool. He does not believe that the present forester or wildlife manager has sufficient knowledge ". . . to enable him to use prescribed burning on anything more than a purely experimental basis. There is a great opportunity and need for research on this problem" (p. 460). He also proposes investigating the use of fire to manipulate the position of the permafrost table for silvicultural benefit.

Ecological research performed within boreal forests in Sweden indicates results similar to those in Interior Alaska. Uggla (1958a), in comparing the effects of controlled fires and wildfire, states that controlled burns on slightly moist ground is the most efficient method of activating humus materials for natural seedbed preparation. He further states, "A feeble forest fire, on not too dry raw humus ground, can be compared with a controlled burning, but on poor, dry soils, uncontrolled forest fires can have devastating effects. . . . On such soils the activating effects of the fire soon disappear. Since also the addition of litter will be very inconsiderable for a long time, degeneration of the forest soil often results" (p. 5).

Prescribed burning techniques for safe and effective land clearing in the Fairbanks area were explored by Johnson (1958, 1959) and Gettinger and Johnson (1959); they found it quite feasible to obtain a good clear burn without endangering the surrounding woods, but only if certain sound practices were pursued.

As yet untapped are means for fully using fire as an effective tool in furthering forest management objectives. Research in fire and silviculture should aid in determining when and how fire should be used and when it should not be used.

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APPENDIX

Table 18.--Monthly and annual normal precipitation

Area	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Interior Basin													
Bettles	0.73	0.39	0.88	0.37	1.05	1.18	1.37	3.09	2.25	1.44	0.69	0.57	14.01
Big Delta	.38	.16	.34	.28	.64	2.31	2.99	1.98	1.43	.50	.29	.33	11.63
Fairbanks	.99	.51	.58	.29	.74	1.37	1.92	2.26	1.21	.92	.63	.50	11.92
Fort Yukon	.38	.34	.28	.17	.32	.71	.96	1.28	.81	.57	.41	.29	6.52
Galena 1/	.77	.81	.74	.18	.63	1.69	2.69	2.84	2.4	.6	.6	.6	14.55
Lake Minchumina 2/													
McGrath	1.14	1.15	.98	.49	.94	2.06	2.32	3.63	2.41	1.67	1.09	1.25	19.13
Northway	.61	.34	.22	.35	.72	2.00	2.89	1.81	1.18	.49	.36	.37	11.34
Summit	1.01	1.33	1.32	.54	.98	2.13	3.38	3.37	3.35	1.89	1.43	1.52	22.25
Tanana	.81	.59	.58	.26	.73	1.26	2.39	2.89	1.99	1.05	.63	.57	13.75
Arctic Drainage													
Kotzebue	.47	.32	.27	.36	.33	.49	1.53	1.95	.94	.58	.43	.35	8.02
West Central													
Bethel	.90	.82	.92	.55	.89	1.20	2.29	4.02	3.01	1.75	.97	.85	18.17
Unalakleet 2/													
Cook Inlet													
Anchorage	.76	.58	.60	.40	.51	.89	1.55	2.56	2.71	1.87	1.00	.84	14.27
Homer	2.39	1.40	1.64	1.33	1.00	1.07	1.66	2.89	2.79	3.74	2.55	2.76	25.22
Bristol Bay													
Iliamna	1.20	.95	1.33	1.01	1.35	1.54	2.80	5.03	3.99	3.20	1.50	1.88	25.78
Naknek	.94	1.24	1.19	.83	1.28	1.52	3.10	4.14	3.49	2.73	1.30	1.21	22.97
Copper River													
Gulkana	.79	.42	.37	.21	.41	1.19	2.12	1.87	2.13	.74	.66	.79	11.70

1/ Data for Sept.-Dec. not given in climatological summary, but obtained through correspondence.
2/ Not sufficient records to establish a mean precipitation.

Source: U. S. Weather Bureau, Climatological Data, Annual Summary, 1958.

Table 19.--Percent of normal annual precipitation for the period March through August

Area	Month						Total precipitation		
	March	April	May	June	July	Aug.	March - August		Annual
							Percent	Inches	Inches
Interior Basin									
Bettles	6.3	2.6	7.5	8.4	9.8	22.1	56.7	7.94	14.01
Big Delta	2.9	2.4	5.5	19.9	25.7	17.0	73.4	8.54	11.63
Fairbanks	4.9	2.4	6.2	11.5	16.1	19.0	60.1	7.16	11.92
Ft. Yukon	4.3	2.6	4.9	10.9	14.8	19.6	57.1	3.72	6.52
Galena	5.1	1.3	4.3	11.6	18.6	19.5	60.4	8.77	14.52
Lake Minchumina	No record								
McGrath	5.1	2.6	4.9	10.8	12.1	19.0	54.5	10.42	19.13
Northway	1.9	3.1	6.3	17.6	25.6	16.0	70.5	7.99	11.34
Summit	5.9	2.4	4.5	9.6	15.2	15.1	52.7	11.72	22.25
Tanana	4.2	1.9	5.3	9.2	17.4	21.0	59.0	8.11	13.75
Arctic Drainage									
Kotzebue	3.3	4.5	4.1	6.1	19.2	24.3	61.5	4.93	8.02
West Central									
Bethel	5.1	3.0	4.9	6.5	12.6	22.1	54.2	9.85	18.17
Unalakleet	No record								
Cook Inlet									
Anchorage	4.2	2.8	3.6	6.2	10.9	17.9	45.6	6.51	14.27
Homer	6.5	5.3	4.0	4.2	6.6	11.4	38.0	9.59	25.22
Bristol Bay									
Iliamna	5.2	3.9	5.2	6.0	10.9	19.5	50.7	13.06	25.78
Naknek	5.2	3.6	5.6	6.6	13.5	18.0	52.5	12.06	22.97
Copper River									
Gulkana	3.2	1.8	3.5	10.2	18.1	16.0	57.7	6.17	11.70

Source: United States Weather Bureau, Climatological Data, Annual Summary, 1958.

Table 20.--Departure from 9-year average precipitation by number of days per month in each intensity class

1950

ANCHORAGE

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	20	9	1	0	0	0		
Dep. from Av.	1.8	2.0	-2.7	-.9	-.1	-.1		
May								
Total	16	12	3	0	0			0
Dep. from Av.	.2	1.2	-.4	-.6	-.3			-.1
June								
Total	12	5	8	4	0	1		
Dep. from Av.	-2.4	-1.9	2.9	1.2	-.5	.7		
July								
Total	8	12	7	3	1	0	0	
Dep. from Av.	-4.6	5.7	.9	-.3	-1.1	-.4	-.2	
August								
Total	15	10	2	2	2	0	0	
Dep. from Av.	4.0	3.9	-5.2	-1.5	0	-1.1	-.1	

FAIRBANKS

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	26	3	1	0				
Dep. from Av.	4.3	-2.7	-1.4	-.2				
May								
Total	16	8	5	2	0	0		
Dep. from Av.	-1.1	-.1	.8	.9	-.4	-.1		
June								
Total	15	7	7	0	0	1	0	
Dep. from Av.	2.5	-1.2	1.5	-2.3	-1.1	.8	-.2	
July								
Total	13	2	10	3	2	1	0	
Dep. from Av.	-1.1	-4.2	4.0	.4	1.0	0	-.1	
August								
Total	17	5	5	3	1	0		
Dep. from Av.	5.9	-2.5	-3.2	-.4	.7	-.4	-.1	

GALENA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	19	6	2	1	2			
Dep. from Av.	1.2	-1.0	-2.5	.5	1.8			
May								
Total	19	10	2	0	0	0		
Dep. from Av.	4.3	.2	-2.5	-1.6	-.3	-.1		
June								
Total	11	7	8	3	0	1	0	
Dep. from Av.	-3.7	.3	2.2	1.1	-.4	.6	-.1	
July								
Total	12	10	5	2	2	0		
Dep. from Av.	-1.0	3.6	-1.3	-1.1	.4	-.6		
August								
Total	10	6	5	5	5	0		
Dep. from Av.	1.6	-.8	-2.1	-1.0	3.8	-1.5		

HOMER

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	16	6	4	0	3	0	1	
Dep. from Av.	1.8	-.9	-1.4	-2.3	2.1	-.2	.9	
May								
Total	13	11	5	2	0	0		
Dep. from Av.	-1.3	2.3	-1.0	.7	-.5	-.2		
June								
Total	13	6	5	4	2	0		
Dep. from Av.	-2.1	-.4	.1	1.8	.7	-.1		
July								
Total	10	9	10	1	1	0		
Dep. from Av.	-6.6	5.0	4.4	-2.4	0	-.4		
August								
Total	18	4	3	4	2	0	0	
Dep. from Av.	4.0	.3	-3.0	.8	-.4	-1.5	-.2	

NORTHWAY

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	23	6	1	0	0			
Dep. from Av.	3.0	-.7	-1.9	-.2	-.2			
May								
Total	11	8	9	3	0	0		
Dep. from Av.	-4.9	.9	4.5	.6	-.9	-.2		
June								
Total	16	7	4	3	0	0		
Dep. from Av.	4.1	-.6	-1.8	.1	-1.0	-.8		
July								
Total	7	8	6	5	3	0	2	
Dep. from Av.	-4.8	1.4	-1.0	1.4	1.7	-.3	1.6	
August								
Total	16	8	6	1	0		0	
Dep. from Av.	4.3	.7	-1.8	-1.7	-1.4		-.1	

BIG DELTA

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	25	2	3	0				
Dep. from Av.	3.8	-3.4	-.2	-.2				
May								
Total	17	7	5	1	1	0	0	
Dep. from Av.	-2.8	1.5	1.5	-.4	.5	-.2	-.1	
June								
Total	20	2	6	1	1	0	0	
Dep. from Av.	5.3	-3.8	.9	-1.2	-.2	-.6	-.4	
July								
Total	14	4	7	2	1	3	0	
Dep. from Av.	-.3	-1.5	.4	.3	-.8	2.0	-.1	
August								
Total	16	4	4	4	1	2		
Dep. from Av.	2.4	-2.0	-2.0	1.5	-1.1	1.2		

FT. YUKON

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	25	2	3	0	0			
Dep. from Av.	1.9	-1.5	.1	-.4	-.1			
May								
Total	20	6	5	0	0			
Dep. from Av.	-2.8	.8	2.6	-.4	-.2			
June								
Total	25	1	4	0	0	0		
Dep. from Av.	4.8	-2.6	-.7	-1.0	-.3	-.2		
July								
Total	23	5	3	0	0			
Dep. from Av.	2.0	.7	-.7	-1.7	-.3			
August								
Total	20	9	1	0	1	0		
Dep. from Av.	2.5	3.4	-3.9	-1.6	-.3	-.1		

GULKANA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	27	2	1	0				
Dep. from Av.	4.6	-2.2	-1.6	-.8				
May								
Total	17	14	0	0	0			
Dep. from Av.	-2.3	6.6	-3.5	-.5	-.3			
June								
Total	16	7	2	5	0	0		
Dep. from Av.	-.2	1.8	-3.1	2.2	-.5	-.2		
July								
Total	14	3	8	3	3	0	0	
Dep. from Av.	-1.5	.1	.6	.2	1.5	-.8	-.1	
August								
Total	19	7	3	1	1	0		
Dep. from Av.	5.6	2.0	-4.8	-1.9	-.3	-.0		

McGRATH

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total1/	19	5	2	3	0	0		
Dep. from Av.	.7	-1.3	-1.9	1.9	-.2	-.2		
May								
Total	17	7	5	2	0	0		
Dep. from Av.	1.9	-1.7	.2	.3	-.5	-.2		
June								
Total	9	9	2	6	2	0	2	
Dep. from Av.	-1.0	-.6	-3.9	2.8	1.4	-.4	1.7	
July								
Total	9	8	4	4	6	0	0	
Dep. from Av.	-2.7	1.9	-3.0	1.2	3.4	-.6	-.2	
August								
Total	10	3	9	3	4	2	0	
Dep. from Av.	2.4	-1.3	.3	-2.8	1.2	.3	-.1	

See footnote at end of table.

Table 20.--Departure from 9-year average precipitation by number of days per month in each intensity class--Continued

1953

ANCHORAGE

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	16	11	2	1	0	0		
Dep. from Av.	-2.2	4.0	-1.7	.1	-.1	-.1		
May								
Total	15	11	2	2	1			0
Dep. from Av.	-.8	.2	-1.4	1.4	.7			-.1
June								
Total	17	6	4	3	0	0		
Dep. from Av.	2.6	-.9	-1.1	.2	-.5	-.3		
July								
Total	15	8	5	1	2	0	0	
Dep. from Av.	2.4	1.7	-1.1	-2.3	-.1	-.4	-.2	
August								
Total	8	3	7	5	5	3	0	
Dep. from Av.	-3.0	-3.1	-.2	1.5	3.0	1.9	-.1	

FAIRBANKS

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	24	5	1	0				
Dep. from Av.	2.3	-.7	-1.4	-.2				
May								
Total	15	6	9	0	1	0		
Dep. from Av.	-2.1	-2.1	4.8	-1.1	.6	-.1		
June								
Total	11	12	3	2	1	0	1	
Dep. from Av.	-1.5	3.8	-2.5	-.3	-.1	-.2	.8	
July								
Total	17	4	4	5	1	0	0	
Dep. from Av.	2.9	-2.2	-2.0	2.4	0	-1.0	-.1	
August								
Total	8	9	9	3	1	0	1	
Dep. from Av.	-3.1	1.5	.8	-.4	.7	-.4	.9	

GALENA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	17	10	3	0	0			
Dep. from Av.	-.8	3.0	-1.5	-.5	-.2			
May								
Total	12	11	4	3	0	1		
Dep. from Av.	-2.7	1.2	-.5	1.4	-.3	.9		
June								
Total	12	8	5	3	1	0	1	
Dep. from Av.	-2.7	1.3	-.8	1.1	.6	-.4	.9	
July								
Total	18	6	5	1	1	0		
Dep. from Av.	5.0	-.4	-1.3	-2.1	-.6	-.6		
August								
Total	2	11	8	5	1	4		
Dep. from Av.	-6.4	4.2	.9	-1.0	-.2	2.5		

HOMER

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	[illegible]	7	[illegible]	2	1	1	[illegible]	
Dep. from Av.	[illegible]	[illegible]	[illegible]	-.3	[illegible]	[illegible]	[illegible]	
May								
Total	[illegible]	[illegible]	3	[illegible]	4	[illegible]		
Dep. from Av.	.7	-.7	[illegible]	[illegible]	[illegible]	[illegible]		
June								
Total	17	8	3	0	2	0		
Dep. from Av.	1.9	1.6	-1.9	-2.2	.7	-.1		
July								
Total	23	5	2	1	0	0		
Dep. from Av.	6.4	1.0	-3.6	-2.4	-1.0	-.4		
August								
Total	12	3	5	4	4	3	0	
Dep. from Av.	-2.0	-.7	-1.0	.8	1.6	1.5	-.2	

NORTHWAY

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total1/	19	7	3					
Dep. from Av.	-1.0	.3	.1					
May								
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Dep. from Av.	-4.9	-2.1	4.5	[illegible]	[illegible]	-.2		
June								
Total1/	19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Dep. from Av.	[illegible]	[illegible]	[illegible]	-2.9	[illegible]	[illegible]		
July								
Total	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	
Dep. from Av.	3.2	[illegible]	[illegible]	[illegible]	[illegible]	.7	-.4	
August								
Total	[illegible]	[illegible]	[illegible]	4	4		[illegible]	
Dep. from Av.	[illegible]	-1.3	1.2	[illegible]	[illegible]		-.2	

BIG DELTA

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	22	7	1	0				
Dep. from Av.	.8	1.6	-2.2	-.2				
May								
Total	12	6	9	2	1	1	0	
Dep. from Av.	-7.8	.5	5.5	.6	.5	.8	-.1	
June								
Total	14	3	7	3	2	0	1	
Dep. from Av.	-.7	-2.8	1.9	.8	.8	-.6	.6	
July								
Total	16	4	7	1	2	1	0	
Dep. from Av.	1.7	-1.5	.4	-.7	.2	0	-.1	
August								
Total	10	7	9	1	4	0		
Dep. from Av.	-3.6	1.0	3.0	-1.5	1.9	-.8		

FT. YUKON

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	28	1	1	0	0			
Dep. from Av.	4.9	-2.5	-1.9	-.4	-.1			
May								
Total	26	4	1	0	0			
Dep. from Av.	3.2	-1.2	-1.4	-.4	-.2			
June								
Total	21	2	4	2	1	0		
Dep. from Av.	.8	-1.6	-.7	1.0	.7	-.2		
July								
Total	20	1	9	1	0			
Dep. from Av.	-1.0	-3.3	5.3	-.7	-.3			
August								
Total	19	5	4	1	2	0		
Dep. from Av.	1.5	-.6	-.9	-.6	.7	-.1		

GULKANA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	24	3	2	1				
Dep. from Av.	1.6	-1.2	-.6	.2				
May								
Total	18	9	4	0	0			
Dep. from Av.	-1.3	1.6	.5	-.5	-.3			
June								
Total	14	5	8	3	0	0		
Dep. from Av.	-2.2	-.2	2.9	.2	-.5	-.2		
July								
Total	17	6	2	5	1	0	0	
Dep. from Av.	1.5	3.1	-5.4	2.2	-.5	-.8	-.1	
August								
Total	8	7	11	2	2	1		
Dep. from Av.	-5.4	2.0	3.2	-.9	.7	.4		

McGRATH

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	18	6	5	1	0	0		
Dep. from Av.	-.3	-.3	1.1	-.1	-.2	-.2		
May								
Total	7	14	4	4	1	1		
Dep. from Av.	-8.1	5.3	-.8	2.3	.5	.8		
June								
Total	9	11	8	1	0	1	0	
Dep. from Av.	-1.0	1.4	2.1	-2.2	-.6	.6	-.3	
July								
Total	16	5	6	3	1	0	0	
Dep. from Av.	4.3	-1.1	-1.0	.2	-1.6	-.6	-.2	
August								
Total	4	3	12	5	2	5	0	
Dep. from Av.	-3.6	-1.3	3.3	-.8	-.8	3.3	-.1	

See footnote at end of table.

Table 20.--Departure from 9-year average precipitation by number of days per month in each intensity class--Continued

1954

ANCHORAGE

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	25	4	1	0	0	0		
Dep. from Av.	6.8	-3.0	-2.7	-.9	-.1	-.1		
May								
Total	17	10	4	0	0			0
Dep. from Av.	1.2	-.8	.6	-.6	-.3			-.1
June								
Total	15	9	2	3	1	0		
Dep. from Av.	.6	2.1	-3.1	.2	.5	-.3		
July								
Total	12	6	7	3	3	0	0	
Dep. from Av.	-.6	-.3	.9	-.3	.9	-.4	-.2	
August								
Total	12	6	6	4	2	1	0	
Dep. from Av.	1.0	-.1	-1.2	.5	0	-.1	-.1	

FAIRBANKS

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	22	8	0	0				
Dep. from Av.	.3	2.3	-2.4	-.2				
May								
Total	24	4	2	1	0	0		
Dep. from Av.	6.9	-4.1	-2.2	-.1	-.4	-.1		
June								
Total	14	8	2	3	3	0	0	
Dep. from Av.	1.5	-.2	-3.5	.7	1.9	-.2	-.2	
July								
Total	13	6	4	5	1	1	1	
Dep. from Av.	-1.1	-.2	-2.0	2.4	0	0	.9	
August								
Total	9	10	9	3	0	0	0	
Dep. from Av.	-2.1	2.5	.8	-.4	-.3	-.4	-.1	

GALENA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	23	4	2	1	0			
Dep. from Av.	5.2	-3.0	-2.5	.5	-.2			
May								
Total	21	7	3	0	0	0		
Dep. from Av.	6.3	-2.8	-1.5	-1.6	-.3	-.1		
June								
Total	21	2	4	2	1	0	0	
Dep. from Av.	6.3	-4.7	-1.8	.1	.6	-.4	-.1	
July								
Total	10	10	3	3	4	1		
Dep. from Av.	3.0	3.6	-3.3	-.1	2.4	.4		
August								
Total	8	7	6	9	1	0		
Dep. from Av.	-.4	.2	-1.1	3.0	-.2	-1.5		

HOMER

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	23	6	1	0	0	0	0	
Dep. from Av.	8.8	-.9	-4.4	-2.3	-.9	-.2	-.1	
May								
Total	15	9	5	2	0	0		
Dep. from Av.	.7	.3	-1.0	.7	-.5	-.2		
June								
Total	18	10	1	1	0	0		
Dep. from Av.	2.9	3.6	-3.9	-1.2	-1.3	-.1		
July								
Total	17	3	5	5	1	0		
Dep. from Av.	.4	-1.0	-.6	1.6	0	-.4		
August								
Total	14	3	4	3	3	4	0	
Dep. from Av.	0	-.7	-2.0	-.2	.6	2.5	-.2	

NORTHWAY

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	18	9	3	0	0			
Dep. from Av.	-2.0	2.3	.1	-.2	-.2			
May								
Total	19	7	1	0	3	1		
Dep. from Av.	3.1	-.1	-3.5	-2.4	2.1	.8		
June								
Total	7	9	8	4	1	1		
Dep. from Av.	-4.9	1.4	2.2	1.1	0	.2		
July								
Total	7	11	10	2	1	0	0	
Dep. from Av.	-4.8	4.4	3.0	-1.6	-.3	-.3	-.4	
August								
Total	17	6	6	1	1	0	0	
Dep. from Av.	5.3	-1.3	-1.8	-1.7	-.4	0	-.1	

BIG DELTA

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	19	7	4	0				
Dep. from Av.	-2.2	1.6	.8	-.2				
May								
Total	21	4	2	3	1	0	0	
Dep. from Av.	1.2	-1.5	-1.5	1.6	.5	-.2	-.1	
June								
Total	13	8	4	1	2	1	1	
Dep. from Av.	-1.7	2.2	-1.1	-1.2	.8	.4	.6	
July								
Total	12	5	10	1	2	1	0	
Dep. from Av.	-2.3	-.5	3.4	-.7	.2	0	-.1	
August								
Total	16	7	3	3	2	0		
Dep. from Av.	2.4	1.0	-3.0	.5	-.1	-.8		

FT. YUKON

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	27	2	1	0	0			
Dep. from Av.	3.9	-1.5	-1.9	-.4	-.1			
May								
Total	28	1	2	0	0			
Dep. from Av.	5.2	-4.2	-.4	-.4	-.2			
June								
Total	17	4	8	1	0	0		
Dep. from Av.	-3.2	.4	3.3	0	-.3	-.2		
July								
Total	15	6	3	6	1			
Dep. from Av.	-6.0	1.7	-.7	4.3	.7			
August								
Total	17	3	9	0	2	0		
Dep. from Av.	-.5	-2.6	4.1	-1.6	.7	-.1		

GULKANA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	30	0	0	0				
Dep. from Av.	7.6	-4.2	-2.6	-.8				
May								
Total	19	6	5	0	1			
Dep. from Av.	-.3	-1.4	1.5	-.5	.7			
June								
Total	18	4	5	2	1	0		
Dep. from Av.	1.8	-1.2	-.1	-.8	.5	-.2		
July								
Total	14	2	10	1	4	0	0	
Dep. from Av.	-1.5	-.9	2.6	-1.8	2.5	-.8	-.1	
August								
Total	16	3	7	4	1	0		
Dep. from Av.	2.6	-2.0	-.8	1.1	-.3	-.6		

McGRATH

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	20	6	3	1	0	0		
Dep. from Av.	1.7	-.3	-.9	-.1	-.2	-.2		
May								
Total	26	1	3	1	0	0		
Dep. from Av.	10.9	-7.7	-1.8	-.7	-.5	-.2		
June								
Total	12	9	2	5	1	1	0	
Dep. from Av.	2.0	-.6	-3.9	1.8	.4	.6	-.3	
July								
Total	10	8	6	0	4	3	0	
Dep. from Av.	-1.7	1.9	-1.0	-2.8	1.4	2.4	-.2	
August								
Total	11	4	7	3	5	1	0	
Dep. from Av.	3.4	-.3	-1.7	-2.8	2.2	-.7	-.1	

See footnote at end of table.

Table 20.--Departure from 9-year average precipitation by number of days per month in each intensity class--Continued

1957

ANCHORAGE

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
Dep. from Av.	2.[illegible]	1.[illegible]	-2.[illegible]	.9	-.[illegible]	[illegible]		
May								
Total	23	7	1	0	[illegible]			[illegible]
Dep. from Av.	7.2	-3.8	-2.4	-.6	-.3			-.2
June								
Total	23	2	2	3	0	[illegible]		
Dep. from Av.	8.6	-4.9	-3.1	.2	-.5	-.3		
July								
Total	16	3	5	6	1		[illegible]	
Dep. from Av.	3.4	-3.3	-1.1	2.7	-1.1	-.4	-.2	
August								
Total	16	2	8	3	1	1	0	
Dep. from Av.	5.0	-4.1	.8	-.5	-1.0	-.1	-.1	

FAIRBANKS

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	21	4	5	0				
Dep. from Av.	-.7	-1.7	2.6	-.2				
May								
Total	19	8	4	0	0	0		
Dep. from Av.	1.9	-.1	-.2	-1.1	-.4	-.1		
June								
Total	20	5	5	0	0	0	0	
Dep. from Av.	7.5	-3.2	-.5	-2.3	-1.1	-.2	-.2	
July								
Total	14	12	4	1	0	0	0	
Dep. from Av.	-.1	5.8	-2.0	-1.6	-1.0	-1.0	-.1	
August								
Total	16	6	8	1	0	0	[illegible]	
Dep. from Av.	4.9	-1.5	-.2	-2.4	-.3	-.4	-.1	

GALENA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	20	5	5	0	0			
Dep. from Av.	2.2	-2.0	.5	-.5	-.2			
May								
Total	20	5	2	3	1			
Dep. from Av.	5.3	-4.8	-2.5	1.4	.7	-.1		
June								
Total	25	2	3	0	0	0	0	
Dep. from Av.	10.3	-4.7	-2.8	-1.9	-.4	-.4	-.1	
July								
Total[1]	19	5	4	2	3	0		
Dep. from Av.	6.0	-1.4	-2.3	-1.1	1.4	-.6		
August								
Total	10	7	6	7	0	1		
Dep. from Av.	1.6	.2	-1.1	1.0	-1.2	-.5		

HOMER

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	17	7	2	3	1	0	[illegible]	
Dep. from Av.	2.8	.1	-3.4	.7	.1	-.2	-.1	
May								
Total	19	8	2	2	0	0		
Dep. from Av.	4.7	-.7	-4.0	.7	-.5	-.2		
June								
Total	26	2	2	0	0	[illegible]		
Dep. from Av.	10.9	-4.4	-2.9	-2.2	-1.3	-.1		
July								
Total	17	0	6	6	1	1		
Dep. from Av.	.4	-4.0	.4	2.6	0	.6		
August								
Total	19	1	5	0	5	0	1	
Dep. from Av.	5.0	-2.7	-1.0	-3.2	2.6	-1.5	.8	

NORTHWAY

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	17	8	4	1	0			
Dep. from Av.	-3.0	1.3	1.1	.8	-.2			
May								
Total	15	5	7	3	1	0		
Dep. from Av.	-.9	-2.1	2.5	.6	.1	-.2		
June								
Total	12	5	6	3	3	1		
Dep. from Av.	.1	-2.6	.2	.1	2.0	.2		
July								
Total	14	3	9	1	3	1	0	
Dep. from Av.	2.2	-3.6	2.0	-2.6	1.7	.7	-.4	
August								
Total	Data missing							
Dep. from Av.								

BIG DELTA

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	19	5	8	0				
Dep. from Av.	-2.2	-.4	2.8	-.2				
May								
Total	23	6	2	0	0	0	0	
Dep. from Av.	3.2	.5	-1.5	-1.4	-.5	-.2	-.1	
June								
Total	18	6	2	3	1	0	0	
Dep. from Av.	3.3	.2	-3.1	.8	-.2	-.6	-.4	
July								
Total	16	4	7	1	2	1	0	
Dep. from Av.	1.7	-1.5	.4	-.7	.2	0	-.1	
August								
Total	18	5	4	1	2	1		
Dep. from Av.	4.4	-1.0	-2.0	-1.5	-.1	.2		

FT. YUKON

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	26	3	0	1	0			
Dep. from Av.	2.9	-.5	-2.9	.6	-.1			
May								
Total	23	5	2	1				
Dep. from Av.	.2	-.2	-.4	.6	-.2			
June								
Total	23	2	5	0	0	0		
Dep. from Av.	2.8	-1.6	.3	-1.0	-.3	-.2		
July								
Total	21	7	2	1	[illegible]			
Dep. from Av.	0	2.7	-1.7	-.7	-.3			
August								
Total	22	6	2	0	1	0		
Dep. from Av.	4.5	.4	-2.9	-1.6	-.3	-.1		

GULKANA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	22	4	4	0				
Dep. from Av.	-.4	-.2	1.4	-.8				
May								
Total	15	8	4	1	[illegible]			
Dep. from Av.	-1.3	.6	.5	.5	-.3			
June								
Total	16	4	5	5	0	0		
Dep. from Av.	-.2	-1.2	-.1	2.2	-.5	-.2		
July								
Total	17	1	6	4	2	1	0	
Dep. from Av.	1.5	-1.9	-1.4	1.2	.5	.2	-.1	
August								
Total	22	3	3	3	0	0		
Dep. from Av.	8.6	-2.0	-4.8	.1	-1.3	-.6		

McGRATH

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
April								
Total	21	4	5	0	0	0		
Dep. from Av.	2.7	-2.3	1.1	-1.1	-.2	-.2		
May								
Total	19	5	4	2	1	0		
Dep. from Av.	3.9	-3.7	-.8	.3	.5	-.2		
June								
Total	19	6	3	2	0	0	0	
Dep. from Av.	9.0	-3.6	-2.9	-1.2	-.6	-.4	-.3	
July								
Total	14	8	6	3	0	0	0	
Dep. from Av.	2.3	1.9	-1.0	.2	-2.6	-.6	-.2	
August								
Total	7	10	8	6	0	0	0	
Dep. from Av.	-.6	5.7	-.7	.2	-2.8	-1.7	-.1	

See footnote at end of table.

Table 20.--Departure from 9-year average precipitation by number of days per month in each intensity class--Continued

1958 1/

ANCHORAGE

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	22	3	4	1	0			
Dep. from Av.	3.8	-4.0	.3	.1	-.1	-.1		
				May				
Total	12	8	7	3	1			
Dep. from Av.	-3.8	-2.8	3.6	2.4	.7			-.1
				June				
Total	15	4	7	2	0	2		
Dep. from Av.	.6	-2.9	1.9	-.8	-.5	1.7		
				July				
Total	8	6	9	2	3	2	1	
Dep. from Av.	-4.6	-.3	2.9	-1.3	.9	1.6	.8	
				August				
Total	12	6	7	5	1	0	0	
Dep. from Av.	1.0	-.1	-.2	1.5	-1.0	-1.1	-.1	

FAIRBANKS

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	21	7	2	0				
Dep. from Av.	-.7	1.3	-.4	-.2				
				May				
Total	18	9	2	1	1			
Dep. from Av.	.9	.9	-2.2	-.1	.6	-.1		
				June				
Total	11	10	4	3	2	0	0	
Dep. from Av.	-1.5	1.8	-1.5	.7	.9	-.2	-.2	
				July				
Total	13	10	5	1	1	1	0	
Dep. from Av.	-1.1	3.8	-1.0	-1.6	0	0	-.1	
				August				
Total	9	12	8	2	0	0	0	
Dep. from Av.	-2.1	4.5	-.2	-1.4	-.3	-.4	-.1	

GALENA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	19	6	5	0	0			
Dep. from Av.	1.2	-1.0	.5	-.5	-.2			
				May				
Total	12	11	6	2				
Dep. from Av.	-2.7	1.2	1.5	.4	-.3	-.1		
				June				
Total	9	4	12	3	1	1	0	
Dep. from Av.	-5.7	-2.7	6.2	1.1	.6	.6	-.1	
				July				
Total	Data missing							
Dep. from Av.								
				August				
Total	Data missing							
Dep. from Av.								

HOMER

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	17	4	4	5	0	0	0	
Dep. from Av.	2.8	-2.9	-1.4	2.7	-.9	-.2	-.1	
				May				
Total	8	8	12	2	1			
Dep. from Av.	-6.3	-.7	6.0	.7	.5	-.2		
				June				
Total	11	9	4	5	1	0		
Dep. from Av.	-4.1	2.6	-.9	2.8	-.3	-.1		
				July				
Total	14	3	6	5	2	1		
Dep. from Av.	-2.6	-1.0	.4	1.6	1.0	.6		
				August				
Total	12	4	8	5	0	2	0	
Dep. from Av.	-2.0	.3	2.0	1.8	-2.4	.5	-.2	

NORTHWAY

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	26	2	1	0	1			
Dep. from Av.	6.0	-4.7	1.9	-.2	.8			
				May				
Total	16	7	4	3	1			
Dep. from Av.	.1	-.1	-.5	.6	.1	-.2		
				June				
Total	23	1	4	2	0			
Dep. from Av.	11.1	-6.6	-1.8	-.9	-1.0	-.8		
				July				
Total	13	6	9	1	1	1	[illegible]	
Dep. from Av.	1.2	-.6	2.0	-2.6	-.3	.7	-.4	
				August				
Total	14	6	5	2	3		1	
Dep. from Av.	2.3	-1.3	-2.8	-.7	1.6		.9	

BIG DELTA

	Precipitation in hundredths of an inch							
	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	24	5	1	0				
Dep. from Av.	2.8	-.4	-2.2	-.2				
				May				
Total	23	7	1	0	0	0	[illegible]	
Dep. from Av.	3.2	1.5	-2.5	-1.4	-.5	-.2	-.1	
				June				
Total	17	6	5	1	1	0	0	
Dep. from Av.	2.3	.2	-.1	-1.2	-.2	-.6	-.4	
				July				
Total	15	11	2	2	0	1	0	
Dep. from Av.	.7	5.5	-4.6	.3	-1.8	0	-.1	
				August				
Total	15	11	2	2	0	1		
Dep. from Av.	1.4	5.0	-4.0	-.5	-2.1	.2		

FT. YUKON

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	20	7	2	1	0			
Dep. from Av.	-3.1	3.5	-.9	.6	-.1			
				May				
Total	21	6	3	1	[illegible]			
Dep. from Av.	-1.8	.8	.6	.6	-.2			
				June				
Total	22	2	4	2	[illegible]			
Dep. from Av.	1.8	-1.6	-.7	1.0	-.3	-.2		
				July				
Total	21	6	1	2	1			
Dep. from Av.	0	1.7	-2.7	.3	.7			
				August				
Total	18	6	3	2	2			
Dep. from Av.	.5	.4	-1.9	.4	.7	-.1		

GULKANA

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	19	10	1	0				
Dep. from Av.	-3.4	5.8	-1.6	-.8				
				May				
Total	13	13	3	2	0			
Dep. from Av.	-6.3	5.6	-.5	1.5	-.3			
				June				
Total	22	4	3	1	0			
Dep. from Av.	5.8	-1.2	-2.1	-1.8	-.5	-.2		
				July				
Total	14	4	8	3	1	1	[illegible]	
Dep. from Av.	-1.5	1.1	.6	.2	-.5	.2	-.1	
				August				
Total	14	4	7	2	3	1		
Dep. from Av.	.6	-1.0	-.8	-.9	1.7	.4		

McGRATH

	0	Tr.	01-09	10-25	26-49	50-99	1.00-1.99	2.00+
				April				
Total	20	8	1	0	1	0		
Dep. from Av.	1.7	1.7	-2.9	-1.1	.8	-.2		
				May				
Total	12	10	8	1	0	[illegible]		
Dep. from Av.	-3.1	1.3	3.2	-.7	-.5	-.2		
				June				
Total	6	9	10	5	0	0	[illegible]	
Dep. from Av.	-4.0	-.6	4.1	1.8	-.6	-.4	-.3	
				July				
Total	8	6	10	5	0	2	0	
Dep. from Av.	-3.7	-.1	3.0	2.2	-2.6	1.4	-.2	
				August				
Total	6	2	12	6	4	1	0	
Dep. from Av.	-1.6	-2.3	3.3	.2	1.2	-.7	-.1	

1/ Discrepancy in basic data.

Table 21.--Monthly precipitation and departure from normal

Area	January		February		March		April		May		June		July		August		September		October		November		December		Total		Apr.-Aug. Total	
	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep	Amt	Dep
1950																												
Interior Basin																												
Big Delta	1.13	.84	.06	-.15	.69	.44	.07	-.28	.71	.00	.61	-1.82	3.37	.21	2.27	.41	.43	-.88	.69	.29	.53	.24	.26	.08	10.82	-.78	7.03	-1.17
Fairbanks	2.00	1.12	.25	-.25	.52	-.14	.03	-.28	.52	-.15	.86	-.56	2.50	.60	1.17	-1.00	.31	-.95	.51	-.36	.99	.31	.39	-.19	10.05	-1.85	5.08	-1.50
Fort Yukon	.68	.26	.06	-.35	.27	-.05	.07	-.19	.13	-.32	.07	-.73	.06	-.94	.32	-.91	.62	-.09	.50	-.14	.48	.10	.57	.26	3.83	-3.10	.65	-2.79
Galena	1.21	.63	.12	-.63	.18	-.63	.80	.66	.12	-1.33	1.88	.64	1.07	-1.60	2.58	-.25	1.87	.31	.26	-.36	.33	-.20	1.12	.23	11.54	-2.33	6.45	-1.58
McGrath	1.80	.68	.07	-1.23	.03	-1.11	.67	.28	.52	-.51	4.36	2.44	2.84	.46	2.82	-.76	2.13	-.29	.44	-1.42	.51	-.62	.98	-.32	17.17	-2.40	11.21	1.77
Northway	.98	.38	.04	-.38	.11	-.15	.03	-.37	.99	.30	.58	-1.42	4.83	1.94	.39	-1.83	.54	-.90	.23	-.31	.31	-.04	.44	.06	9.47	-2.72	6.82	-.95
Cook Inlet																												
Anchorage	.83	-.01	Tr	-.67	.29	-.26	.04	-.37	.10	-.40	1.90	1.20	.97	-.66	.92	-1.68	1.07	-1.51	.52	-1.66	.26	-.78	1.71	.86	8.61	-5.94	3.93	-1.98
Homer	.71	-1.98	.16	-1.41	1.08	-.77	2.75	1.48	.50	-.64	1.40	.38	1.02	-.74	1.34	-1.78	2.63	-2.84	2.36	-1.57	.08	-2.32	1.44	-1.37	15.47	-13.56	7.01	-.94
Copper River																												
Gulkana	.86	-.03	.39	-.04	Tr	-.45	.06	-.37	Tr	-.47	.81	-.42	2.81	.70	.53	-1.33	1.75	.17	.44	-.42	.87	.22	.73	-.23	9.25	-2.67	4.21	-1.59
1953																												
Interior Basin																												
Big Delta	.04	-.34	.30	.14	.16	-.18	.04	-.24	1.81	1.17	2.67	.36	2.05	-.94	1.77	.21	.63	-.80	.31	-.19	.03	-.26	.18	-.15	9.99	-1.64	8.34	.14
Fairbanks	.12	-.87	.27	-.24	.20	-.38	.01	-.28	.64	-.10	1.85	.48	1.37	-.55	2.97	.71	1.32	.11	.11	-.81	Tr	-.63	.13	-.37	8.99	-2.93	6.84	.26
Fort Yukon	.19	-.19	.22	-.12	.12	-.16	.01	-.16	.02	-.30	1.00	.29	.66	-.30	1.16	-.12	.89	.06	.45	-.12	.20	-.21	.67	.38	5.59	-.93	2.85	-.59
Galena	.10	-.67	1.03	.22	.20	-.54	.11	-.07	1.38	.75	2.15	.46	.69	-2.00	4.02	1.18	1.10	-1.27	.34	-.30	.21	-.43	.35	-.27	11.68	-2.94	8.35	.32
McGrath	.27	-.87	.97	-.18	.18	-.80	.24	-.25	1.98	1.04	1.12	-.94	1.15	-1.17	5.86	2.23	1.86	-.55	.33	-1.34	.21	-.88	.61	-.64	14.78	-4.35	10.35	.91
Northway	.07	-.54	.06	-.28	.12	-.10	.11	-.24	1.35	.63	4.00	2.00	1.24	-1.65	2.12	.31	.95	-.23	.41	-.08	.07	-.29	.24	-.13	10.74	-.60	8.82	1.05
Cook Inlet																												
Anchorage	.20	-.56	.48	-.10	.21	-.39	.15	-.25	.76	.25	.57	-.32	1.14	-.41	5.06	2.50	1.85	-.86	.81	-1.06	.11	-.89	1.11	.27	12.45	-1.82	7.68	1.77
Homer	.98	-1.41	3.57	2.17	.21	-1.43	1.49	.16	2.04	1.04	.74	-.33	.16	-1.50	4.81	1.92	2.43	-.36	3.82	.08	2.74	.19	2.20	-.56	25.19	-.03	9.24	1.29
Copper River																												
Gulkana	.18	-.61	.62	.20	.47	.10	.18	-.03	.18	-.23	.72	-.47	1.09	-1.03	2.08	.21	1.39	-.74	.71	-.03	.15	-.51	.92	.13	8.69	-3.01	4.25	-1.55
1954																												
Interior Basin																												
Big Delta	.48	.10	.05	-.11	.20	-.14	.13	-.15	1.15	.51	3.37	1.06	2.06	-.93	1.49	-.49	2.06	.63	.38	-.12	.19	-.10	.31	-.02	11.87	.24	8.20	.00
Fairbanks	.55	-.44	.21	-.30	.60	.02	Tr	-.29	.17	-.57	1.78	.41	3.22	1.30	.84	-1.42	1.82	.61	.08	-.84	.42	-.21	.48	-.02	10.17	-1.75	6.01	-.83
Fort Yukon	.58	.20	.27	-.07	.28	.00	.01	-.16	.10	-.22	.41	-.30	1.26	.30	.92	-.36	.77	-.04	.41	-.16	.84	.43	.79	.50	6.64	.12	2.70	-.74
Galena	.19	-.58	.18	-.63	.35	-.39	.23	.05	.09	-.54	.95	-.74	2.81	.12	1.79	-1.05	1.87	-.50	.41	-.23	.45	-.19	.44	-.18	9.76	-4.86	5.87	-2.16
McGrath	.63	-.51	.28	-.87	1.04	.06	.29	-.20	.34	-.60	1.83	-.23	4.73	2.41	3.22	-.41	3.59	1.18	.73	-.94	1.85	.76	1.43	.18	19.98	.83	10.41	.97
Northway	.16	-.45	.15	-.19	.18	-.04	.14	-.21	1.52	.80	1.71	-.29	1.21	-1.68	.60	-1.21	.90	-.28	.21	-.28	.19	-.17	.51	.14	7.48	-3.86	5.18	-2.59
Cook Inlet																												
Anchorage	.56	-.20	.18	-.40	.97	.37	.03	-.37	.15	-.36	.91	.02	2.08	.53	2.13	-.43	1.66	-1.05	2.02	.15	.93	-.07	1.00	.16	12.62	-1.65	5.30	-.61
Homer	1.12	-1.27	.76	-.64	1.93	.29	.01	-1.32	.43	-.57	.26	-.81	1.90	.24	4.13	1.24	1.47	-1.32	4.63	.89	2.44	-.11	1.34	-1.42	20.42	-4.80	6.73	-1.22
Copper River																												
Gulkana	.33	-.46	.52	.10	.22	-.15	.00	-.21	.39	-.02	.69	-.50	1.94	-.18	1.48	-.39	1.75	-.38	.86	.12	.61	-.05	.84	.05	9.63	-2.07	4.50	-1.30
1957																												
Interior Basin																												
Big Delta	1.35	.97	1.33	1.17	.46	.12	.11	-.17	.03	-.61	1.05	-1.26	1.92	-1.07	1.65	-.33	.72	-.71	.63	.13	.09	-.20	.56	.23	9.90	-1.73	4.76	-3.44
Fairbanks	1.92	.93	.56	.05	.15	-.43	.08	-.21	.07	-.67	.21	-1.16	.40	-1.52	.40	-1.86	.47	-.74	.74	-.18	.30	-.33	.25	-.25	5.55	-6.37	1.16	-5.68
Fort Yukon	.56	.18	.38	.04	.22	-.06	.13	-.04	.23	-.09	.22	-.49	.27	-.69	.38	-.90	.58	-.23	.45	-.12	.49	.08	.26	-.03	4.17	-2.35	1.23	-2.21
Galena	1.10	.33	.79	-.02	.49	-.25	.17	-.01	.73	.10	.18	-1.51	1.40	-1.29	2.14	-.70	1.76	-.61	1.00	.36	1.63	.99	.49	-.13	11.88	-2.74	4.62	-3.41
McGrath	3.67	2.53	1.11	-.04	.72	-.26	.19	-.30	.82	-.12	.42	-1.64	.79	-1.53	1.21	-2.42	2.17	-.24	1.43	-.24	1.53	.44	.53	-.72	14.59	-4.54	3.43	6.01
Northway	.43	-.18	.47	.13	.29	.07	.43	.08	1.21	.49	2.12	.12	2.51	-.38	Missing data						.37	.01	.43	.06				
Cook Inlet																												
Anchorage	1.36	.60	.67	.09	.20	-.40	.01	-.39	.02	-.49	.56	-.33	1.64	.09	2.02	-.54	3.21	.50	.93	-.94	1.51	.51	.36	-.48	12.49	-1.78	4.25	-1.66
Homer	.94	-1.45	.83	-.57	.42	-1.22	.76	-.57	.37	-.63	.09	-.98	2.26	.60	3.04	.15	4.30	1.51	3.63	-.11	6.00	3.45	2.35	-.41	24.99	-.23	6.52	-1.43
Copper River																												
Gulkana	.51	-.28	.49	.07	.09	-.28	.11	-.10	.42	.01	1.04	-.15	2.67	.55	.66	-1.21	3.41	1.28	1.56	.82	.51	-.15	.41	-.38	11.88	.18	4.90	-.90
1958																												
Interior Basin																												
Big Delta	.38	-.03	.06	-.10	.36	.02	.01	-.27	.08	-.56	.79	-1.52	1.07	-1.92	.96	-1.02	.75	-.68	.90	.40	.44	.15	.25	-.08	6.02	-5.61	2.91	-5.29
Fairbanks	.31	-.68	.07	-.44	.24	-.34	.09	-.20	.57	-.17	1.01	-.36	1.42	-.50	.61	-1.65	.46	-.75	.84	-.08	.40	-.23	.41	-.09	6.43	-5.49	3.70	-3.14
Fort Yukon	.68	.30	.07	-.27	.26	-.02	.15	-.02	.17	-.15	.39	-.32	.82	-.14	.97	-.31	.22	-.59	1.22	.65	1.17	.76	.34	.05	6.46	-.06	2.50	-.94
Galena	.80	.03	.21	-.60	.59	-.15	.11	-.07	.47	-.16	1.69	.00	3.53	.84	2.46	-.38	Missing data										8.26	.23
McGrath	.36	-.78	.18	-.97	.64	-.34	.32	-.17	.44	-.50	1.10	-.96	2.88	.56	3.73	.10	2.95	.54	.81	-.86	.68	-.41	.17	-1.08	14.26	-4.87	8.47	-.97
Northway	.20	-.41	.18	-.16	.16	-.06	.43	.08	.76	.04	.51	-1.49	1.47	-1.42	2.94	1.13	1.07	-.11	1.05	.56	.32	-.04	.23	-.14	9.32	-2.02	6.11	-1.66
Cook Inlet																												
Anchorage	1.05	.29	.07	-.51	.19	-.41	.25	-.15	1.05	.54	2.19	1.30	4.44	2.89	1.67	-.89	1.31	-1.40	1.93	.06	1.41	.41	.54	-.30	16.10	1.83	9.60	3.69
Homer	3.74	1.35	.48	-.92	1.69	.05	.86	-.45	1.12	.12	1.12	.05	2.48	.82	2.89	.00	2.37	-.42	2.08	-1.66	4.72	2.17	1.05	-1.71	24.62	-.60	8.49	.54
Copper River																												
Gulkana	1.02	.23	.24	-.18	.33	-.04	.01	-.20	.33	-.08	.29	-.90	1.73	-.39	2.02	.15	1.10	-1.03	1.66	.92	.84	.18	.87	.08	10.44	-1.26	4.38	-1.42

Source: USWB Climatological Data, Alaska Annual Summary, for the years mentioned.

Table 22.--Precipitation intensity classes, according to frequency of occurrence by decades of the month

(Av. 1950-58)

ANCHORAGE

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				Precipitation in hundredths of an inch				
April								
1-10	5.8	2.0	2.0	0.1		0.1		
11-20	5.8	3.0	.7	.3	0.1			
21-30	6.6	2.0	1.0	.5				
Total	18.2	7.0	3.7	.9	.1	.1		
May								
1-10	5.8	2.8	1.3	.1	.1			
11-20	4.1	4.4	.9	.3	.1			0.1
21-31	5.9	3.6	1.2	.2	.1			
Total	15.8	10.8	3.4	.6	.3			.1
June								
1-10	5.4	2.7	1.3	.6	.1			
11-20	4.4	1.9	2.0	1.2	.1	.3		
21-30	4.6	2.3	1.8	1.0	.3			
Total	14.4	6.9	5.1	2.8	.5	.3		
July								
1-10	4.3	2.0	1.9	.9	.8	.1		
11-20	4.1	2.3	1.8	1.0	.7		0.1	
21-31	4.2	2.0	2.4	1.4	.6	.3	.1	
Total	12.6	6.3	6.1	3.3	2.1	.4	.2	
August								
1-10	3.7	1.7	2.4	1.3	.4	.6		
11-20	4.9	1.9	2.4	.4	.4	.1		
21-31	2.4	2.5	2.4	1.8	1.2	.4	.1	
Total	11.0	6.1	7.2	3.5	2.0	1.1	.1	

BETHEL

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				Precipitation in hundredths of an inch				
April								
1-10	4.6	3.3	2.0	0.2				
11-20	3.9	2.2	3.1	.4	0.3			
21-30	3.1	2.7	3.4	.7	.1			
Total	11.6	8.2	8.5	1.3	.4			
May								
1-10	4.7	2.9	1.6	.7	.1			
11-20	3.6	2.6	2.9	.7	.2	0.1		
21-31	3.7	3.1	2.3	1.4	.3	.1		
Total	12.0	8.6	6.8	2.8	.6	.2		
June								
1-10	2.7	2.8	2.4	1.8	.3	.1		
11-20	3.0	3.3	2.0	1.2	.3	.1		
21-30	3.9	2.4	2.6	.8	.3			
Total	9.6	8.5	7.0	3.8	.9	.2		
July								
1-10	3.9	2.0	2.1	1.3	.7			
11-20	2.9	2.1	2.9	1.3	.8			
21-31	2.5	2.1	4.2	1.2	.7	.1	0.2	
Total	9.3	6.2	9.2	3.8	2.2	.1	.2	
August								
1-10	1.1	2.3	3.6	1.0	1.0	.6	.2	
11-20	2.4	1.2	2.9	2.0	.9	.7		0.1
21-31	1.2	1.9	3.2	2.9	.8	.7	.3	
Total	4.7	5.4	9.7	5.9	2.7	2.0	.5	.1

BETTLES

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				Precipitation in hundredths of an inch				
April								
1-10	5.4	2.8	1.3	0.3	0.1			
11-20	6.8	1.9	1.1	.1	.1			
21-30	7.1	1.9	.9	.2				
Total	19.3	6.6	3.3	.6	.2			
May								
1-10	6.9	1.4	1.2	.4				
11-20	6.3	2.4	1.1	.3	.1			
21-31	5.2	3.8	1.3	.1	.4	0.1		
Total	18.4	7.6	3.6	.8	.5	.1		
June								
1-10	6.8	1.3	1.0	.8	.2			
11-20	4.4	3.2	1.1	.6	.2	.3	0.1	
21-30	4.8	2.3	1.9	.7	.2	.1		
Total	16.0	6.8	4.0	2.1	.6	.4	.1	
July								
1-10	5.1	1.9	2.1	.7	.1	.1		
11-20	6.3	2.1	1.0	.4	.2			
21-31	4.9	1.8	1.8	1.3	1.0	.2		
Total	16.3	5.8	4.9	2.4	1.3	.3		
August								
1-10	3.4	2.0	2.6	1.1	.8	.1		
11-20	3.4	2.9	1.6	.9	.9	.3		
21-31	3.4	2.7	2.0	1.2	.9	.6	.2	
Total	10.2	7.6	6.2	3.2	2.6	1.0	.2	

BIG DELTA

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				Precipitation in hundredths of an inch				
April								
1-10	6.7	1.9	1.4					
11-20	7.4	1.6	.8	0.2				
21-30	7.1	1.9	1.0					
Total	21.2	5.4	3.2	.2				
May								
1-10	6.2	2.3	1.3	.2	0.1			
11-20	7.9	1.2	.3	.3	.1	0.1		
21-31	5.7	2.0	1.9	.9	.3	.1	0.1	
Total	19.8	5.5	3.5	1.4	.5	.2	.1	
June								
1-10	6.8	1.9	1.1	.2	.1			
11-20	4.2	1.6	2.0	1.0	.7	.4	.1	
21-30	3.7	2.3	2.0	1.0	.4	.2	.3	
Total	14.7	5.8	5.1	2.2	1.2	.6	.4	
July								
1-10	5.4	1.7	1.7	.4	.3	.3	.1	
11-20	4.4	1.9	2.1	.3	.7	.4		
21-31	4.5	1.9	2.8	1.0	.8	.3		
Total	14.3	5.5	6.6	1.7	1.8	1.0	.1	
August								
1-10	4.7	2.1	1.8	.8	.3	.3		
11-20	4.4	2.0	1.9	.7	.8	.2		
21-31	4.5	1.9	2.3	1.0	1.0	.3		
Total	13.6	6.0	6.0	2.5	2.1	.8		

FAIRBANKS

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				Precipitation in hundredths of an inch				
April								
1-10	6.7	2.3	1.0					
11-20	7.4	1.8	.7	0.1				
21-30	7.6	1.6	.7	.1				
Total	21.7	5.7	2.4	.2				
May								
1-10	6.1	2.1	1.6	.3				
11-20	5.9	2.8	.9	.4				
21-31	5.1	3.2	1.7	.4	0.4	0.1		
Total	17.1	8.1	4.2	1.1	.4	.1		
June								
1-10	5.9	2.6	1.1	.2	.2			
11-20	2.9	3.4	2.1	.8	.6	.1	0.1	
21-30	3.7	2.2	2.3	1.3	.3	.1	.1	
Total	12.5	8.2	5.5	2.3	1.1	.2	.2	
July								
1-10	5.2	2.2	1.4	.9	.1	.2		
11-20	4.6	1.7	2.2	.6	.3	.6	.1	
21-31	4.3	2.3	2.4	1.1	.6	.2		
Total	14.1	6.2	6.0	2.6	1.0	1.0	.1	
August								
1-10	3.7	2.8	2.2	1.0	.1	.2		
11-20	4.6	2.6	2.1	.7				
21-31	2.8	2.1	3.9	1.7	.2	.2	.1	
Total	11.1	7.5	8.2	3.4	.3	.4	.1	

FT. YUKON

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				Precipitation in hundredths of an inch				
April								
1-10	6.9	1.6	1.4	0.1				
11-20	7.6	1.0	1.2	.2				
21-30	8.6	.9	.3	.1	0.1			
Total	23.1	3.5	2.9	.4	.1			
May								
1-10	7.3	1.2	1.2	.1	.1			
11-20	8.2	1.7	.3					
21-31	7.3	2.3	.9	.3	.1			
Total	22.8	5.2	2.4	.4	.2			
June								
1-10	7.9	1.1	.8	.1	.1			
11-20	6.9	.7	1.7	.6	.1	0.1		
21-30	5.4	1.8	2.2	.3	.1	.1		
Total	20.2	3.6	4.7	1.0	.3	.2		
July								
1-10	6.9	1.3	1.6	.4				
11-20	6.9	1.6	.9	.3	.2			
21-31	7.2	1.4	1.2	1.0	.1			
Total	21.0	4.3	3.7	1.7	.3			
August								
1-10	6.8	2.3	.7	.3	.1			
11-20	5.4	1.4	2.1	.4	.4	.1		
21-31	5.3	1.9	2.1	.9	.8			
Total	17.5	5.6	4.9	1.6	1.3	.1		

Table 22.--Precipitation intensity classes, according to frequency of occurrence by decades of the month--Continued

(Av. 1950-58)

GALENA

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	5.6	2.0	2.1	0.3	0.1			
11-20	6.0	2.7	1.2		.1			
21-30	6.2	2.3	1.2	.2				
Total	17.8	7.0	4.5	.5	.2			
				May				
1-10	5.9	2.9	.9	.3				
11-20	4.3	3.0	2.0	.4	.2			
21-31	4.5	3.9	1.6	.9	.1	0.1		
Total	14.7	9.8	4.5	1.6	.3	.1		
				June				
1-10	4.7	2.3	2.1	.4	.2	.2		
11-20	5.3	2.2	1.8	.7			0.1	
21-30	4.7	2.2	1.9	.8	.2	.2		
Total	14.7	6.7	5.8	1.9	.4	.4	.1	
				July				
1-10	4.0	2.4	2.1	1.1	.2	.1		
11-20	4.4	2.2	1.8	.6	.8	.2		
21-31	4.6	1.8	2.4	1.4	.6	.3		
Total	13.0	6.4	6.3	3.1	1.6	.6		
				August				
1-10	3.7	2.2	2.2	1.1	.6	.3		
11-20	2.8	2.8	2.0	1.8	.3	.3		
21-31	1.9	1.8	2.9	3.1	.3	.9		
Total	8.4	6.8	7.1	6.0	1.2	1.5		

GULKANA

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	7.3	1.1	1.3	0.1				
11-20	7.6	1.6	.6	.6				
21-30	7.5	1.5	.7	.1				
Total	22.4	4.2	2.6	.8				
				May				
1-10	6.2	2.8	.7	.3				
11-20	6.9	1.8	1.1	.1	0.1			
21-31	6.2	2.8	1.7	.1	.2			
Total	19.3	7.4	3.5	.5	.3			
				June				
1-10	7.2	1.2	1.1	.3	.1			
11-20	3.9	2.3	2.7	.9	.2			
21-30	5.1	1.7	1.3	1.6	.2	0.2		
Total	16.2	5.2	5.1	2.8	.5	.2		
				July				
1-10	5.8	.6	2.3	.4	.7	.1		
11-20	4.0	1.6	2.9	1.1	.2	.1	0.1	
21-31	5.7	.7	2.2	1.3	.6	.6		
Total	15.5	2.9	7.4	2.8	1.5	.8	.1	
				August				
1-10	5.7	1.1	1.7	.4	.9	.2		
11-20	4.2	2.0	2.9	.7	.2			
21-31	3.5	1.9	3.2	1.8	.2	.4		
Total	13.4	5.0	7.8	2.9	1.3	.6		

HOMER

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	5.0	1.9	2.0	0.9	0.1	0.1		
11-20	4.4	2.2	1.8	.8	.6	.1	0.1	
21-30	4.8	2.8	1.6	.6	.2			
Total	14.2	6.9	5.4	2.3	.9	.2	.1	
				May				
1-10	5.3	2.7	1.4	.4	.1	.1		
11-20	4.2	2.6	2.5	.6	.2			
21-31	4.8	3.4	2.1	.3	.2	.1		
Total	14.3	8.7	6.0	1.3	.5	.2		
				June				
1-10	5.2	2.3	1.6	.6	.3			
11-20	4.2	2.4	2.0	.7	.6	.1		
21-30	5.7	1.7	1.3	.9	.4			
Total	15.1	6.4	4.9	2.2	1.3	.1		
				July				
1-10	5.2	1.4	1.7	1.6	.2			
11-20	5.4	1.3	2.0	.8	.1	.3		
21-31	6.0	1.3	1.9	1.0	.7	.1		
Total	16.6	4.0	5.6	3.4	1.0	.4		
				August				
1-10	4.9	1.1	1.8	.9	.8	.6		
11-20	5.1	1.2	1.8	1.2	.3	.3	.1	
21-31	4.0	1.4	2.4	1.1	1.3	.6	.1	
Total	14.0	3.7	6.0	3.2	2.4	1.5	.2	

ILIAMNA

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	5.1	2.2	1.8	0.6	0.2			
11-20	4.3	2.7	1.6	.7	.6	0.2		
21-30	4.8	2.9	1.4	.7	.2			
Total	14.2	7.8	4.8	2.0	1.0	.2		
				May				
1-10	4.7	2.6	1.8	.8	.1			
11-20	4.4	3.0	1.4	.8	.2	.1		
21-31	4.6	3.2	2.7	.6				
Total	13.7	8.8	5.9	2.2	.3	.1		
				June				
1-10	4.1	2.9	1.2	1.1	.7	.1		
11-20	4.2	2.3	2.2	.7	.4	.1		
21-30	4.3	2.1	1.8	1.1	.6	.1		
Total	12.6	7.3	5.2	2.9	1.7	.3		
				July				
1-10	4.0	1.2	2.7	1.3	.4	.3		
11-20	4.6	1.6	1.8	1.4	.4	.3		
21-31	4.8	1.7	2.1	1.1	.9	.4		
Total	13.4	4.5	6.6	3.8	1.7	1.0		
				August				
1-10	3.9	1.4	2.1	1.3	.3	.9		
11-20	3.3	1.8	2.0	1.1	.9	.6	0.3	
21-31	1.9	2.0	2.6	1.8	1.1	1.1	.6	
Total	9.1	5.2	6.7	4.2	2.3	2.6	.9	

KOTZEBUE

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	4.0	3.9	1.9	0.2				
11-20	5.4	2.7	1.9					
21-30	5.2	2.7	1.7	.4				
Total	14.6	9.3	5.5	.6				
				May				
1-10	6.1	2.2	1.7	.1				
11-20	5.4	2.0	2.1	.4				
21-31	5.6	3.9	1.1	.4				
Total	17.1	8.1	4.9	.9				
				June				
1-10	5.7	1.8	1.7	.9				
11-20	5.9	2.9	.8	.3	0.1			
21-30	4.4	2.8	2.2	.3	.1	0.1		
Total	16.0	7.5	4.7	1.5	.2	.1		
				July				
1-10	4.6	1.7	2.2	1.0	.3	.2		
11-20	5.9	2.3	.9	.7	.1	.1		
21-31	4.3	2.0	3.2	1.0	.3	.2		
Total	14.8	6.0	6.3	2.7	.7	.5		
				August				
1-10	2.1	2.5	2.3	1.0	1.1	.9		
11-20	2.7	2.7	2.2	1.2	.6	.7		
21-31	2.7	2.3	2.6	2.2	.7	.4	0.1	
Total	7.5	7.5	7.1	4.4	2.4	2.0	.1	

LAKE MINCHUMINA

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	6.4	2.3	1.2		0.1			
11-20	8.1	1.0	.8	0.1				
21-30	7.6	1.1	1.1	.2				
Total	22.1	4.4	3.1	.3	.1			
				May				
1-10	6.8	2.2	1.3	.3		0.1		
11-20	5.8	2.9	1.2	.1				
21-31	5.8	1.9	1.3	.9	.1	.3		
Total	18.4	7.0	3.8	1.3	.1	.4		
				June				
1-10	5.1	2.4	2.2	.2	.1			
11-20	3.6	2.9	1.4	1.7	.2	.1	0.1	
21-30	4.6	1.9	2.4	.8	.2	.1		
Total	13.3	7.2	6.0	2.7	.5	.2	.1	
				July				
1-10	5.0	2.4	1.1	1.0	.2	.2		
11-20	3.6	1.9	2.0	1.4	.7	.4		
21-31	3.2	2.1	3.8	1.3	.6	.1		
Total	11.8	6.4	6.9	3.7	1.5	.7		
				August				
1-10	3.5	2.2	2.9	1.2	.3			
11-20	4.3	2.0	1.3	1.4	.6	.2		0.1
21-31	2.2	2.8	3.1	1.3	.8	.7	.1	
Total	10.0	7.0	7.3	3.9	1.7	.9	.1	.1

Table 22.--Precipitation intensity classes, according to frequency of occurrence by decades of the month--Continued

(Av. 1950-58)

McGRATH

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	5.8	2.2	1.7	0.1		0.1		
11-20	6.6	1.7	1.1	.6	0.1	.1		
21-30	5.9	2.4	1.1	.4	.1			
Total	18.3	6.3	3.9	1.1	.2	.2		
				May				
1-10	5.6	2.9	1.2	.3				
11-20	4.7	2.7	1.8	.8	.1			
21-31	4.8	3.1	1.8	.6	.4	.2		
Total	15.1	8.7	4.8	1.7	.5	.2		
				June				
1-10	3.7	2.7	2.1	1.3			0.1	
11-20	2.7	3.3	2.2	.8	.6	.3	.1	
21-30	3.6	3.6	1.6	1.1		.1	.1	
Total	10.0	9.6	5.9	3.2	.6	.4	.3	
				July				
1-10	3.9	2.0	2.9	.4	.8			
11-20	3.7	2.1	1.4	1.6	.8	.2	.2	
21-31	4.1	2.0	2.7	.8	1.0	.4		
Total	11.7	6.1	7.0	2.8	2.6	.6	.2	
				August				
1-10	2.7	1.6	3.1	1.7	.4	.5		
11-20	3.3	1.4	2.3	1.4	1.2	.4		
21-31	1.6	1.3	3.3	2.7	1.2	.8	.1	
Total	7.6	4.3	8.7	5.8	2.8	1.7	.1	

NAKNEK

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	5.0	2.6	1.4	1.7	0.1			
11-20	4.0	2.1	2.7	.6	.2			
21-30	3.6	1.9	3.0	1.0	.1			
Total	12.6	6.6	7.1	3.3	.4			
				May				
1-10	4.0	2.8	2.3	.7	.2			
11-20	3.6	2.7	2.3	.9	.4	0.1		
21-31	3.4	3.6	1.9	1.9	.2			
Total	11.0	9.1	6.5	3.5	.8	.1		
				June				
1-10	3.4	2.8	2.2	.8	.6	.2		
11-20	2.9	2.8	2.9	1.4	.3	.2		
21-30	3.7	2.9	2.3	.4	.2			
Total	10.0	8.5	7.4	2.6	1.1	.4		
				July				
1-10	3.0	2.8	2.4	.9	.4	.3	0.1	
11-20	3.2	2.4	2.7	1.2	.2	.2		
21-31	3.4	2.8	3.1	1.0	.6	.3		
Total	9.6	8.0	8.2	3.1	1.2	.8	.1	
				August				
1-10	2.3	2.6	2.6	1.3	.7	.6		
11-20	2.1	2.9	2.4	1.6	.6	.3	.1	
21-31	2.0	.9	3.8	2.1	1.8	.2	.1	
Total	6.4	6.4	8.8	5.0	3.1	1.1	.2	

NORTHWAY

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	6.4	2.2	1.4					
11-20	7.3	2.1	.7		0.1			
21-30	6.3	2.4	.8	0.2	.1			
Total	20.0	6.7	2.9	.2	.2			
				May				
1-10	5.6	2.2	1.6	.4	.2			
11-20	6.3	2.2	.9	.6				
21-31	4.0	2.7	2.0	1.4	.7	0.2		
Total	15.9	7.1	4.5	2.4	.9	.2		
				June				
1-10	4.6	3.1	1.7	.3	.1	.2		
11-20	4.3	2.4	1.8	.8	.7	.2		
21-30	3.0	2.1	2.3	1.8	.2	.4		
Total	11.9	7.6	5.8	2.9	1.0	.8		
				July				
1-10	4.6	1.6	2.1	1.2	.7			
11-20	3.2	2.2	2.6	1.2	.3	.1	0.3	
21-31	4.0	2.8	2.3	1.2	.3	.2	.1	
Total	11.8	6.6	7.0	3.6	1.3	.3	.4	
				August				
1-10	4.8	2.0	2.4	.4	.5			
11-20	3.2	2.4	2.3	1.5	.5		.1	
21-31	3.7	2.9	3.1	.8	.4			
Total	11.7	7.3	7.8	2.7	1.4		.1	

SUMMIT

Time of Day	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	5.3	1.7	2.2	0.7	0.1			
11-20	4.8	2.7	2.0	.4	.1			
21-30	5.4	2.6	1.8	.2				
Total	15.5	7.0	6.0	1.3	.2			
				May				
1-10	5.8	2.3	1.4	.3	.1	0.2		
11-20	4.2	3.4	1.8	.2	.3			
21-31	5.1	2.9	2.1	.7	.2			
Total	15.1	8.6	5.3	1.2	.6	.2		
				June				
1-10	4.9	2.6	1.1	1.1	.2	.1		
11-20	2.7	2.8	2.2	1.0	1.1	.2		
21-30	3.2	2.6	1.9	1.0	1.1	.2		
Total	10.8	8.0	5.2	3.1	2.4	.5		
				July				
1-10	3.8	2.7	2.2	.9	.4	.2		
11-20	3.3	2.2	1.7	1.2	1.4	.1		
21-31	3.7	1.4	1.4	2.0	1.4	.9	0.1	
Total	10.8	6.3	5.3	4.1	3.2	1.2	.1	
				August				
1-10	3.4	1.7	2.8	1.0	.6	.6		
11-20	3.4	1.9	2.3	1.3	.8	.2		
21-31	2.0	1.7	3.1	2.0	1.3	.6	.3	
Total	8.8	5.3	8.2	4.3	2.7	1.4	.3	

TA A.A

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	6.3	2.6	0.9	0.2				
11-20	7.3	1.9	.7				0.1	
21-30	7.4	1.8	.7	.1				
Total	21.0	6.3	2.3	.3			.1	
				May				
1-10	6.5	2.6	.7	.2				
11-20	6.1	1.9	1.2	.3	0.2	0.1	.1	
21-31	5.9	2.7	1.6	.7	.2			
Total	18.5	7.2	3.5	1.2	.4	.1	.1	
				June				
1-10	6.2	2.1	1.2	.4	.1			
11-20	4.8	2.2	1.4	1.1	.1	.3		
21-30	4.9	2.3	1.6	.6	.6	.1		
Total	15.9	6.6	4.2	2.1	.8	.4		
				July				
1-10	5.3	1.9	1.8	.8	.2	.1		
11-20	5.3	1.9	1.3	.4	.9	.1		
21-31	4.9	2.1	1.2	1.7	1.0	.1		
Total	15.5	5.9	4.3	2.9	2.1	.3		
				August				
1-10	3.6	2.4	1.9	1.6	.2	.3		
11-20	4.0	2.3	2.3	.8	.4	.1		
21-31	3.2	1.6	2.8	1.6	1.0	.8	.1	
Total	10.8	6.3	7.0	4.0	1.6	1.2	.1	

UNALAKLEET

Time of Month	0	Tr.	.01-.09	.10-.25	.26-.49	.50-.99	1.0-1.99	2.0+
				April				
1-10	4.0	4.1	1.7	0.2				
11-20	5.4	3.3	1.0		0.2			
21-30	4.6	3.7	1.2	.6				
Total	14.0	11.1	3.9	.8	.2			
				May				
1-10	6.3	2.6	.6	.3	.2			
11-20	4.7	3.9	.8	.7				
21-31	4.3	5.4	1.1		.1			
Total	15.3	11.9	2.5	1.0	.3			
				June				
1-10	4.6	3.1	1.4	.4	.3	0.1		
11-20	3.8	4.4	.9	.8	.1			
21-30	4.6	3.6	1.1	.6	.1	.1		
Total	13.0	11.1	3.4	1.8	.5	.2		
				July				
1-10	4.4	3.6	.8	.9	.3			
11-20	3.8	2.7	2.0	1.1	.4	.1		
21-31	2.9	2.4	2.4	1.9	1.0	.3		
Total	11.1	8.7	5.2	3.9	1.7	.4		
				August				
1-10	1.9	1.8	2.8	1.4	1.2	.8	0.1	
11-20	2.1	2.3	2.1	1.6	1.0	.8	.1	
21-31	2.1	2.0	2.9	2.0	1.1	.7	.2	
Total	6.1	6.1	7.8	5.0	3.3	2.3	.4	

Source: United States Weather Bureau coded data.

Table 23.--Air temperature by hour of day, and number of days per month in each temperature class

(Av. 1950-58)

ANCHORAGE

Time of day	Temperature, degrees F. 1/ 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	17.1	0.7				
0900	[illegible]	[illegible]	.4			
1200	10.6	15.9	2.2			
1500	9.0	16.8	3.6	0.2		
1800	[illegible]	[illegible]	.9	.1		
2100	[illegible]	8.2				
Av.	14.1	[illegible]	1.2	.1		
			May			
0300	[illegible]	[illegible]	[illegible]			
0900	.2	19.2	[illegible]	.7		
1200		10.2	18.4	2.4		
1500		9.1	18.1	3.6	0.2	
1800	.1	15.4	[illegible]	2.7		
2100	1.8	24.3	[illegible]	.1		
Av.	2.6	15.7	10.9	1.6		
			June			
0300	.8	18.3	10.6	.3		
0900		3.4	19.5	6.1	.7	
1200		1.4	15.9	11.4	1.2	0.1
1500		1.0	12.9	12.8	3.1	.2
1800		1.7	16.0	10.3	1.9	.1
2100		5.3	20.2	4.3	.2	
Av.	.1	5.2	15.9	7.5	1.2	.1
			July			
0300		7.7	22.8	1.0		
0900			17.5	12.6	.9	
1200			9.7	17.0	4.3	
1500			8.0	16.7	6.0	.3
1800		.1	11.0	15.7	4.1	.1
2100		.2	21.2	9.4	.2	
Av.		1.3	14.9	12.1	2.6	.1
			August			
0300	.4	8.6	21.2	.8		
0900		.6	21.3	9.0	.1	
1200			11.7	18.1	1.2	
1500		.1	8.3	19.8	2.8	
1800		.1	14.4	15.5	1.0	
2100	.1	2.0	24.0	4.9		
Av.	.1	1.9	16.8	11.4	.8	

BETHEL

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	[illegible]	[illegible]				
0900	12.8	[illegible]				
1200	12.3	6.6	0.8			
1500	[illegible]	[illegible]	[illegible]			
1800	13.4	[illegible]	.9			
2100	[illegible]	[illegible]				
Av.	[illegible]	4.1	.4			
			May			
0300	[illegible]	[illegible]				
0900	9.7	[illegible]	[illegible]			
1200	6.1	11.6	11.0	1.3		
1500	4.4	12.2	11.2	2.3		
1800	5.8	13.4	9.2	2.0		
2100	9.2	15.8	3.9			
Av.	9.1	12.4	6.8	.9		
			June			
0300	3.8	20.2	6.0			
0900	.7	13.0	12.9	3.4		
1200	.1	7.3	13.2	8.4	1.0	
1500	.1	4.7	13.3	9.1	2.7	0.1
1800		5.2	13.7	8.6	2.4	.1
2100	.8	8.2	15.1	5.6	.3	
Av.	.9	9.8	12.4	5.8	1.1	
			July			
0300		14.1	16.9			
0900		5.2	16.6	6.8	.4	
1200		2.3	16.2	9.7	2.7	.1
1500		1.0	15.1	10.8	3.9	.2
1800		1.7	14.8	10.8	3.3	.4
2100		3.6	19.4	7.3	.7	
Av.		4.7	16.8	7.6	1.8	.1
			August			
0300	.3	14.7	16.0			
0900		6.1	23.1	1.8		
1200		1.6	23.1	5.6	.7	
1500		1.1	20.5	8.3	1.1	
1800		2.0	21.6	6.7	.7	
2100	.1	6.1	22.8	2.0		
Av.	.1	5.2	21.2	4.1	.4	

BETTLES

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	2.9					
0900	7.8	1.2	[illegible]			
1200	[illegible]	4.6	.5			
1500	13.1	5.3	.7			
1800	11.2	3.8	.2			
2100	6.3	1.0				
Av.	8.7	2.8	.3			
			May			
0300	14.4	8.2	.6			
0900	6.3	12.6	[illegible]	1.3		
1200	4.3	10.8	10.4	4.4	0.1	
1500	3.2	9.8	11.0	5.7	.6	
1800	4.0	11.6	10.3	3.7	.7	
2100	8.4	11.7	7.0	1.1		
Av.	6.8	10.8	8.0	2.7	.2	
			June			
0300	2.8	15.8	11.3		.1	
0900	.1	3.3	12.3	13.4	.9	
1200	.1	1.8	8.7	12.5	6.9	
1500	.1	.8	7.6	10.2	9.7	1.6
1800	.1	1.6	7.4	12.3	8.0	.6
2100	.1	3.7	14.3	10.3	1.6	
Av.	.5	4.5	10.3	9.8	4.5	.4
			July			
0300	.9	14.4	14.4	1.3		
0900		2.1	13.5	11.7	3.7	
1200		.9	8.9	12.2	7.1	1.9
1500		.4	6.7	11.8	9.0	3.1
1800		.4	7.7	12.5	8.1	2.3
2100		1.6	16.4	10.8	1.9	.3
Av.	.1	3.3	11.3	10.0	5.0	1.3
			August			
0300	5.0	16.2	9.7	.1		
0900	.2	8.6	17.2	5.0		
1200	.1	3.4	14.7	10.7	2.1	
1500	.1	2.0	13.2	11.7	4.0	
1800		3.6	14.2	10.0	3.2	
2100	.8	12.2	15.4	2.6		
Av.	1.0	7.7	14.1	6.7	1.5	

BIG DELTA

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	8.9	1.2				
0900	12.6	7.8	1.1	0.2		
1200	8.4	13.0	2.3	.8		
1500	8.9	12.2	3.1	.8	0.1	
1800	11.6	9.9	1.1	.7		
2100	14.9	2.8	.4			
Av.	10.9	7.8	1.3	.4		
			May			
0300	13.2	12.9	1.6			
0900	2.3	9.8	15.5	2.7	.2	
1200	1.6	6.6	15.1	6.9	.8	
1500	1.3	5.7	15.6	7.2	.9	
1800	2.3	9.6	13.1	5.3	.6	
2100	4.4	17.7	7.2	.7		
Av.	4.2	10.4	11.4	3.8	.4	
			June			
0300	.8	14.8	13.2	1.2		
0900		2.4	10.2	13.9	3.4	
1200		.9	7.5	12.5	7.6	1.2
1500		.6	8.1	11.4	7.7	2.2
1800		1.4	8.8	13.2	5.2	1.4
2100		4.3	16.1	8.6	1.0	
Av.	.1	4.1	10.7	10.1	4.2	.8
			July			
0300		7.0	19.3	4.7		
0900		.9	10.2	14.7	5.1	.1
1200		.6	4.6	14.4	9.4	2.0
1500		.4	5.1	13.2	9.3	3.0
1800		.9	6.9	13.5	8.3	1.4
2100		1.3	14.8	13.5	1.6	
Av.		1.9	10.1	12.3	5.6	1.1
			August			
0300	2.3	14.7	[illegible]	1.4		
0900		4.1	13.7	11.4	1.8	
1200		1.4	[illegible]	13.0	7.2	
1500		1.2	9.1	11.8	8.0	1.0
1800	.2	1.6	14.2	10.1	4.7	.2
2100	.1	7.0	16.1	7.6	.2	
Av.	.4	5.0	12.4	9.2	3.7	.3

FAIRBANKS

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	7.2	0.7	0.2			
0900	12.0	7.4	1.3	0.2		
1200	8.0	11.6	4.0	1.0		
1500	7.0	12.6	4.4	1.1		
1800	9.0	11.6	3.0	.8		
2100	14.0	4.0	1.0			
Av.	9.5	8.0	2.3	.5		
			May			
0300	15.0	10.9	2.2			
0900	2.3	8.3	14.6	5.4	0.1	
1200	.8	5.9	12.3	10.9	1.0	
1500	1.0	3.8	11.9	12.3	1.8	0.1
1800	1.2	5.4	14.0	8.8	1.2	.1
2100	3.7	13.7	12.2	1.0	.2	
Av.	4.0	8.0	11.2	6.4	.7	
			June			
0300	1.3	11.9	15.7	1.1		
0900		.3	10.6	14.2	4.8	.1
1200		.3	5.3	13.4	9.2	1.8
1500			4.2	11.9	10.9	3.0
1800		.3	5.6	13.5	8.3	2.3
2100		1.2	11.9	13.8	3.0	.1
Av.	.2	2.3	8.9	11.3	6.1	1.2
			July			
0300	.1	9.0	20.6	1.3		
0900		.4	9.2	16.0	5.3	.1
1200		.3	3.3	12.9	11.4	3.1
1500			3.8	11.2	11.9	4.1
1800			5.0	11.9	10.8	3.3
2100		.2	12.1	16.2	2.4	.1
Av.		1.6	9.0	11.6	7.0	1.8
			August			
0300	2.1	15.3	12.9	.7		
0900	.1	2.6	15.9	11.6	.8	
1200		.7	8.2	14.5	7.2	.4
1500		.4	7.8	12.5	9.1	1.2
1800		1.0	11.1	11.4	6.9	.6
2100	.1	5.3	17.9	7.7		
Av.	.4	4.2	12.3	9.7	4.0	.4

FT. YUKON

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	2.8	0.1				
0900	6.9	2.7	0.3			
1200	9.7	5.1	2.0			
1500	9.7	7.2	2.2	0.1		
1800	data missing					
2100	7.9	2.3				
Av.	7.4	3.5	.9			
			May			
0300	12.1	9.2	1.0			
0900	6.4	8.7	10.3	2.2	0.3	
1200	3.9	8.7	10.4	6.4	1.0	
1500	3.0	6.7	10.7	8.9	1.4	0.1
1800	data missing					
2100	6.2	7.7	11.7	4.0	.2	
Av.	6.3	8.2	8.8	4.3	.6	
			June			
0300	1.4	10.9	15.8	1.9		
0900		2.1	8.7	14.6	4.6	
1200		.6	5.6	13.7	9.4	.7
1500		.2	4.7	11.8	12.1	1.2
1800	data missing					
2100	.1	1.2	8.3	14.7	5.6	.1
Av.	.3	3.0	8.6	11.4	6.3	.4
			July			
0300	.7	5.4	20.6	4.3		
0900		.9	5.9	16.2	7.3	.7
1200		.3	2.9	12.0	12.9	2.7
1500		.2	2.3	10.9	13.3	3.6
1800	data missing					
2100	.1	.3	3.6	17.9	8.3	.8
Av.	.2	1.4	7.1	12.3	8.4	1.6
			August			
0300	3.4	11.4	15.4	.8		
0900		4.4	13.5	11.0	2.1	
1200		1.7	8.3	13.0	7.2	.8
1500		1.3	7.4	12.0	9.0	1.3
1800	data missing					
2100		5.2	12.4	11.3	2.1	
Av.	.7	4.8	11.4	9.6	4.1	.4

Table 23.--Air temperature by hour of day, and number of days per month in each temperature class--Continued

(Av. 1950-58)

GALENA

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	6.1	.2				
0900	9.0	2.4				
1200	9.9	6.6	0.9			
1500	10.6	7.6	1.2	0.2		
1800	11.2	6.4	1.0	.1		
2100	10.3	2.6	.3			
Av.	9.5	4.3	.6	.1		
			May			
0300	14.0	11.1	1.0			
0900	3.8	13.4	10.3	1.2		
1200	2.7	7.8	14.2	5.0	0.2	
1500	2.3	7.3	12.4	7.6	.7	
1800	2.8	7.9	12.1	7.0	.4	
2100	3.7	12.4	11.0	2.2		
Av.	4.9	10.0	10.2	3.8	.2	
			June			
0300	.9	12.6	15.6	.9		
0900	.1	3.2	15.5	10.1	1.1	
1200		1.0	9.7	13.2	5.7	0.4
1500		.3	7.0	13.1	8.2	1.4
1800		.7	8.1	13.0	7.1	1.1
2100		1.4	12.6	13.3	2.6	.1
Av.	.2	3.2	11.4	10.6	4.1	.5
			July			
0300		6.4	22.5	2.1		
0900		1.0	14.0	13.1	2.9	
1200		.2	8.8	13.0	7.8	1.2
1500		.2	6.2	13.0	9.0	2.6
1800		.2	7.0	13.0	8.6	2.2
2100		.6	13.1	13.4	3.9	
Av.		1.4	11.9	11.3	5.4	1.0
			August			
0300	1.4	11.0	18.1	.5		
0900		5.0	20.6	5.4		
1200		2.2	16.2	11.2	1.4	
1500		1.4	13.2	13.9	2.4	.1
1800		1.9	15.3	11.4	2.4	
2100	.1	3.4	21.9	5.5	.1	
Av.	.2	4.2	17.6	8.0	1.0	

GULKANA

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	5.6					
0900	16.0	6.0	0.4			
1200	11.7	13.8	1.9	0.3		
1500	11.1	13.9	2.3	.7		
1800	16.1	8.2	1.3	.1		
2100	14.2	1.3				
Av.	12.4	7.2	1.0	.2		
			May			
0300	21.3	4.0				
0900	1.9	16.1	12.0	1.0		
1200	.7	10.0	14.9	5.0	0.4	
1500	.7	11.0	14.0	4.7	.6	0.1
1800	1.4	16.9	9.8	2.6	.2	.1
2100	10.3	16.9	2.9	.3		
Av.	6.0	12.5	8.9	2.3	.2	
			June			
0300	6.9	19.1	4.0			
0900		2.8	13.7	12.1	1.4	
1200		1.3	8.8	12.2	7.1	.6
1500		1.3	7.9	11.2	8.2	1.4
1800		2.7	10.7	11.2	4.4	1.0
2100		9.8	14.8	4.6	.8	
Av.	1.2	6.2	10.0	8.5	3.6	.5
			July			
0300	2.0	19.2	9.8			
0900		2.3	10.2	15.7	2.8	
1200		.7	5.8	14.1	8.4	2.0
1500		.6	6.0	12.4	8.4	3.6
1800		1.2	7.7	13.8	6.0	2.3
2100		4.1	18.4	7.9	.6	
Av.	.3	4.7	9.6	10.7	4.4	1.3
			August			
0300	4.7	20.1	5.3			
0900	.1	4.1	17.8	8.9	.1	
1200		1.1	10.2	14.1	5.6	
1500		1.2	8.8	13.8	6.2	1.0
1800		3.0	14.3	9.4	3.9	.4
2100	.7	11.0	16.4	2.9		
Av.	.9	6.8	12.1	8.2	2.6	.2

HOMER

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	16.2	1.2				
0900	17.6	10.3	0.1			
1200	12.0	16.7	.7			
1500	11.6	16.6	1.1			
1800	17.3	10.8	.2			
2100	21.1	2.8				
Av.	15.9	9.7	.4			
			May			
0300	18.4	9.9				
0900	1.2	25.7	4.1			
1200	.6	22.3	7.9	0.2		
1500	.9	23.2	6.8	.1		
1800	2.1	26.1	2.8			
2100	9.2	21.3	.3			
Av.	5.4	21.4	3.6	.1		
			June			
0300	6.4	20.9	2.6	.1		
0900		10.3	17.4	2.1	0.2	
1200		6.4	21.0	2.2	.4	
1500		6.4	20.7	2.6	.3	
1800		10.0	17.7	2.1		
2100	.2	19.3	10.1	.4		
Av.	1.1	12.2	14.9	1.6	.2	
			July			
0300	2.6	21.1	7.3			
0900		.9	24.0	5.9	.2	
1200		.1	21.8	8.4	.7	
1500		.7	20.5	9.4	.4	
1800		1.1	23.2	6.7		
2100		7.8	22.8	.4		
Av.	.4	5.3	20.0	5.1	.2	
			August			
0300	2.1	16.1	12.2	.6		
0900		.8	24.5	5.7		
1200		.2	21.5	9.2	.1	
1500			22.7	8.2	.1	
1800		.2	26.8	4.0		
2100	.2	9.4	21.0	.4		
Av.	.4	4.4	21.5	4.7		

ILIAMNA

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-29	70-79	80-89
			April			
0300	14.6					
0900	16.9	5.0	0.1			
1200	14.6	10.2	.7			
1500	15.6	9.6	.7			
1800	18.4	5.6	.1			
2100	18.3	.4				
Av.	16.4	5.1	.3			
			May			
0300	23.0	5.6				
0900	7.7	19.3	3.7	0.1		
1200	4.0	17.1	9.4	.4		
1500	3.7	16.9	9.3	1.0		
1800	6.6	19.3	4.8	.3		
2100	17.1	12.8	.7			
Av.	10.4	15.2	4.6	.3		
			June			
0300	4.2	23.5	2.0	.3		
0900	.3	11.9	14.6	2.8	0.4	
1200		7.4	16.2	5.1	1.0	0.3
1500		7.1	13.8	6.8	2.0	.3
1800	.1	9.9	12.9	5.1	1.6	.4
2100	.5	17.6	9.9	1.7	.3	
Av.	.8	12.9	11.6	3.6	.9	.2
			July			
0300		18.3	12.7			
0900		2.7	20.6	7.4	.3	
1200		1.7	15.5	11.0	2.8	
1500		1.3	14.5	11.0	3.9	.3
1800		1.6	17.9	8.2	3.3	
2100		6.0	21.1	3.9		
Av.		5.3	17.0	6.9	1.7	.1
			August			
0300	.6	12.1	18.3			
0900		2.2	23.7	5.0	.1	
1200		.6	18.4	11.0	1.0	
1500		.4	17.2	11.6	1.7	.1
1800		1.1	21.9	7.2	.8	
2100	.1	5.6	24.0	1.3		
Av.	.1	3.7	20.6	6.0	.6	

KOTZEBUE

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	2.8					
0900	4.4					
1200	8.1	0.1				
1500	9.1	.1				
1800	6.9					
2100	4.3					
Av.	5.9					
			May			
0300	16.6	1.4				
0900	16.0	5.9	1.1	0.1		
1200	15.1	8.4	1.0	.3		
1500	15.8	9.0	1.2	.1		
1800	16.9	7.1	.6	.1		
2100	17.7	3.4	.2			
Av.	16.4	5.9	.7	.1		
			June			
0300	11.7	13.2	4.2	.2		
0900	9.3	12.6	6.3	1.2	0.4	
1200	7.1	12.8	8.0	1.8	.3	
1500	5.3	12.3	10.0	2.1	.3	
1800	6.7	11.5	9.7	2.1		
2100	8.7	11.7	8.3	1.3		
Av.	8.1	12.3	7.8	1.4	.2	
			July			
0300	1.0	12.0	16.7	1.3		
0900	.3	10.6	14.9	4.6	.6	
1200		6.4	16.6	7.1	.8	0.1
1500		5.6	15.3	8.4	1.7	
1800	.1	6.2	15.5	8.3	.9	
2100	.2	7.9	17.8	5.0	.1	
Av.	.3	8.1	16.1	5.8	.7	
			August			
0300	1.7	15.6	13.6	.1		
0900	.2	9.8	18.2	2.8		
1200		8.2	18.7	3.8	.3	
1500		6.6	19.4	4.6	.4	
1800	.1	7.3	20.0	3.4	.2	
2100	.4	11.8	18.0	.8		
Av.	.4	9.9	18.0	2.6	.1	

LAKE MINCHUMINA

Time of day	Temperature, degrees F. 30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	6.9	0.6				
0900	11.8	3.8	0.8			
1200	11.4	9.4	1.2	0.3		
1500	10.3	10.4	2.2	.4		
1800	12.1	8.0	1.5	.3		
2100	13.8	2.9	.7			
Av.	11.0	5.8	1.1	.2		
			May			
0300	14.4	11.6	1.0			
0900	3.4	13.9	10.8	2.0		
1200	2.0	8.8	14.2	5.4	0.3	
1500	1.8	7.8	14.7	6.0	.7	
1800	2.6	10.1	13.8	4.0	.4	
2100	4.2	15.8	8.9	.9	.1	
Av.	4.7	11.3	10.6	3.0	.2	
			June			
0300	1.3	14.1	13.0	1.6		
0900		2.6	13.4	11.3	2.7	
1200		1.2	8.2	13.7	6.6	0.3
1500		1.0	6.7	15.1	7.0	.2
1800		.9	9.8	13.5	5.7	.1
2100		3.9	16.0	8.7	1.4	
Av.	.2	4.0	11.2	10.6	3.9	.1
			July			
0300	.1	8.2	20.5	2.2		
0900		.8	12.9	12.9	4.3	.1
1200		.6	8.3	13.1	7.1	1.9
1500		.3	6.3	13.0	8.4	3.0
1800		.3	8.4	12.7	7.8	1.8
2100		1.4	15.8	11.1	2.7	
Av.		1.9	12.1	10.8	5.1	1.1
			August			
0300	1.3	13.6	15.4	.7		
0900		4.4	18.2	8.0	.4	
1200		2.2	13.3	12.1	3.4	
1500		1.3	11.5	13.3	4.6	.3
1800		1.8	16.1	10.3	2.7	.1
2100	.2	6.6	18.0	6.2		
Av.	.3	5.0	15.4	8.4	1.8	.1

Table 23.--Air temperatures by hour of day, and number of days per month in each temperature class--Continued

(Av. 1950-58)

MCGRATH

Time of day	30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	6.9	0.4				
0900	13.6	4.8	0.3			
1200	[illegible]	11.0	1.9	[illegible]		
1500	8.7	13.1	2.6	.6		
1800	10.8	10.3	1.6	.3		
2100	14.8	2.7	.2			
Av.	[illegible]	7.0	1.1	.2		
			May			
0300	[illegible]	.9	[illegible]			
0900	[illegible]	[illegible]	11.8	1.8		
1200	[illegible]	[illegible]	13.9	5.6	0.3	
1500	[illegible]	.9	13.7	7.9	.6	
1800	[illegible]	.2	13.1	6.1	.3	
2100	[illegible]	[illegible]	9.3	.8		
Av.	[illegible]	[illegible]	10.4	3.7	.2	
			June			
0300	8.1	16.4	9.9	.6		
0900		3.2	14.1	11.4	1.3	
1200		1.1	10.1	12.9	5.3	0.6
1500		.7	9.1	11.6	7.4	1.2
1800		1.2	9.4	12.5	5.9	1.0
2100		.1	15.2	10.3	1.4	
Av.	.5	4.3	11.3	9.9	3.5	.5
			July			
0300	.6	10.5	18.7	.9		
0900		4.2	19.4	6.1	1.3	
1200		.3	8.3	14.4	6.7	1.3
1500			7.8	12.3	8.1	2.8
1800		.3	8.3	13.5	6.6	2.3
2100		1.1	15.6	11.7	2.4	
Av.	.1	2.8	13.0	9.8	4.2	1.1
			August			
0300	2.7	13.7	14.0	.6		
0900		5.0	20.2	5.8		
1200		1.2	15.9	11.2	2.7	
1500		1.0	12.4	13.3	4.1	.2
1800		1.9	15.0	11.7	2.3	.1
2100	.2	6.2	20.6	4.0		
Av.	.3	4.8	16.3	7.8	1.5	.1

[illegible]

Time of day	30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	11.9	0.9				
0900	13.9	7.2	0.1			
1200	11.8	11.2	2.0			
1500	11.0	12.0	2.3	0.1		
1800	13.0	10.6	.9			
2100	16.3	3.0	.1			
Av.	12.9	7.5	.9			
			May			
0300	19.6	5.0				
0900	5.8	20.0	5.0			
1200	2.4	14.7	12.8	1.1		
1500	2.2	14.7	11.9	2.2		
1800	3.4	17.7	9.0	.9		
2100	10.9	18.9	1.0			
Av.	7.4	15.7	6.6	.7		
			June			
0300	5.7	21.2	3.0	.1		
0900	.6	11.2	15.5	2.4	0.3	
1200		5.7	15.3	7.2	1.6	0.2
1500		3.7	14.5	9.1	2.1	.6
1800		6.9	15.3	6.2	1.3	.3
2100	1.0	14.1	13.3	1.3	.3	
Av.	1.2	10.5	12.8	4.4	.9	.2
			July			
0300	.2	19.1	11.6	.1		
0900		3.2	21.6	5.7	.3	
1200		1.0	14.0	13.1	2.7	.2
1500		.8	12.3	12.6	4.1	1.2
1800		1.4	15.8	10.4	3.3	.1
2100		5.7	21.1	4.2		
Av.		5.2	16.1	7.7	1.7	.3
			August			
0300	.3	12.3	17.7	.7		
0900		1.9	23.6	5.2	.1	
1200		.2	17.0	11.7	1.1	
1500		.4	14.8	12.9	2.8	.1
1800		.6	19.8	9.4	1.2	
2100		5.1	23.2	2.7		
Av.	.1	3.4	19.5	7.1	.9	

NORTHWAY

Time of day	30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	2.7	0.1				
0900	14.8	4.9	0.7			
1200	11.5	11.4	1.6	0.6		
1500	12.0	11.4	2.0	.4		
1800	14.2	6.6	.9	.3		
2100	10.0	1.4	.2			
Av.	10.9	6.0	.9	.2		
			May			
0300	17.2	6.6				
0900	2.9	12.1	13.9	[illegible]	[illegible]	
1200	1.3	6.4	15.1	[illegible]	[illegible]	
1500	1.1	8.2	15.1	[illegible]	[illegible]	
1800	2.3	11.2	13.9	[illegible]	[illegible]	
2100	9.7	16.3	3.6	.2		
Av.	5.6	10.5	10.3	2.7	.3	
			June			
0300	1.6	17.8	10.1	.3		
0900	.2	2.3	10.9	14.3	2.2	0.1
1200		1.8	6.9	13.5	7.2	.6
1500		1.6	7.0	13.9	6.9	.6
1800		1.9	10.6	12.6	4.6	.3
2100	.1	5.8	17.6	6.3	.2	
Av.	.3	5.2	10.5	10.2	3.5	.3
			July			
0300	.4	14.0	16.3	[illegible]		
0900		1.3	10.2	16.2	[illegible]	
1200		.4	5.8	14.1	[illegible]	[illegible]
1500		.4	5.3	[illegible]	[illegible]	[illegible]
1800		.6	9.0	[illegible]	[illegible]	[illegible]
2100	.1	2.3	16.8	[illegible]	[illegible]	
Av.	.1	3.2	10.9	[illegible]	[illegible]	[illegible]
			August			
0300	5.1	8.1	5.1	.1		
0900	.2	5.1	15.1	8.8	[illegible]	
1200		2.4	3.6	14.9	5.1	
1500		1.8	10.1	12.4	6.5	.2
1800		4.2	13.3	10.0	3.4	.1
2100	1.1	12.4	14.6	2.9		
Av.	1.1	7.7	11.1	8.2	2.6	.1

[illegible]

Time of day	30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	[illegible]	0.1				
0900	[illegible]	1.6				
1200	[illegible]	4.0	0.3			
1500	[illegible]	4.4	.3			
1800	[illegible]	2.3	.1			
2100	[illegible]	.3				
Av.	[illegible]	2.2	.1			
			May			
0300	[illegible]	.8				
0900	[illegible]	12.9	3.4	0.1		
1200	[illegible]	14.9	5.7	.7		
1500	[illegible]	13.7	7.4	.7	0.1	
1800	10.0	14.2	5.1	.4	.1	
2100	17.7	9.9				
Av.	13.2	10.9	3.6	.3		
			June			
0300	10.0	18.3	1.7			
0900	1.2	12.3	11.6	4.6	.3	
1200	.7	7.4	12.1	7.7	2.1	
1500	.4	6.3	12.3	8.3	2.7	
1800	.7	9.0	11.6	7.1	1.4	
2100	2.9	13.8	10.9	2.3	.1	
Av.	2.6	11.2	10.1	5.0	1.1	
			July			
0300	2.0	22.7	6.3			
0900		9.1	15.3	6.3	.3	
1200		4.6	14.5	8.8	3.1	
1500		3.6	13.1	10.2	4.1	0.1
1800		5.1	14.6	7.8	3.3	
2100	.1	11.7	15.1	4.1		
Av.	.3	9.5	13.2	6.2	1.8	
			August			
0300	5.7	21.7	3.6			
0900	.7	14.6	13.1	2.6		
1200	.4	7.3	16.9	5.3	.9	
1500	.3	6.9	16.8	5.4	1.6	
1800	.6	9.8	15.5	4.4	.4	
2100	1.3	18.3	10.8	.6		
Av.	1.5	13.1	12.6	3.1	.5	

TANANA

Time of day	30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	4.2	0.6				
0900	10.3	4.0	0.8			
1200	10.4	7.6	2.0	0.3		
1500	9.6	8.6	2.7	.7		
1800	12.2	5.7	1.4	.2		
2100	10.4	2.0	.2			
Av.	9.5	4.8	1.2	.2		
			May			
0300	14.8	9.9	.3			
0900	4.1	10.1	12.9	2.8		
1200	2.3	7.1	12.8	7.4	0.6	
1500	2.1	6.2	12.9	8.3	1.1	0.1
1800	2.1	7.7	13.3	6.3	.6	
2100	6.3	13.1	8.9	1.1		
Av.	5.3	9.0	10.2	4.3	.4	
			June			
0300	3.1	14.5	11.2	1.1	.1	
0900		1.4	12.2	13.0	3.4	
1200		.7	7.0	12.9	8.6	.8
1500		.3	4.8	13.4	9.2	2.3
1800		.7	6.4	14.8	7.1	1.0
2100		3.0	14.4	10.8	1.8	
Av.	.5	3.5	9.3	11.0	5.0	.7
			July			
0300	1.7	12.9	15.1	1.3		
0900		.7	11.0	14.9	4.3	.1
1200		.4	5.9	13.1	9.8	1.8
1500		.1	5.0	13.1	10.0	2.8
1800		.3	5.8	13.9	9.0	2.0
2100		1.1	13.9	13.7	2.3	
Av.	.3	2.6	9.4	11.7	5.9	1.1
			August			
0300	3.9	14.9	10.8	.7		
0900	.2	5.0	16.2	9.6		
1200	.1	1.6	12.3	13.3	3.7	
1500		1.3	11.2	13.0	5.2	.3
1800		2.4	13.9	12.0	2.7	
2100	1.1	8.2	17.4	4.3		
Av.	.9	5.6	13.6	8.8	1.9	.1

UNALAKLEET

Time of day	30-39	40-49	50-59	60-69	70-79	80-89
			April			
0300	7.6	0.4				
0900	11.2	2.3				
1200	12.4	4.4	0.2			
1500	12.4	4.9	.2			
1800	11.7	2.9				
2100	10.3	.6				
Av.	10.9	2.6	.1			
			May			
0300	16.9	7.6	.2			
0900	9.8	12.9	5.3	0.9		
1200	8.1	13.7	5.7	1.9		
1500	9.0	11.6	6.6	1.7	0.1	
1800	10.1	11.0	7.0	.9		
2100	14.2	10.7	2.6			
Av.	11.4	11.3	4.6	.9		
			June			
0300	4.9	18.0	7.0		.1	
0900	1.6	8.8	15.6	3.6	.3	0.1
1200	1.2	6.9	15.6	4.4	.8	.1
1500	1.2	6.9	15.6	5.0	1.2	.1
1800	1.8	7.2	16.3	3.6	1.0	.1
2100	2.2	10.3	16.0	1.4	.1	
Av.	2.2	9.7	14.4	3.0	.6	.1
			July			
0300	.7	10.6	15.9	.8		
0900		2.1	18.3	9.7	.9	
1200		1.2	17.6	10.4	1.8	
1500		1.0	17.7	11.1	1.2	
1800		1.3	19.6	9.1	1.0	
2100		2.8	23.5	4.7		
Av.	.1	3.2	19.3	7.6	.8	
			August			
0300	1.3	13.1	16.3	.3		
0900		4.0	23.9	3.0	.1	
1200		2.3	21.3	6.8	.6	
1500		2.1	21.2	7.0	.6	.1
1800		2.8	23.1	4.7	.4	
2100	.6	7.2	22.1	1.1		
Av.	.3	5.3	21.3	3.8	.3	

1/ Temperature frequencies below 30° F. were not compiled. All stations in April and May, and Kotzebue in June had temperatures below 30° F.

Source: United States Weather Bureau coded data.

Table 24.--Normal relative humidity according to time of day

Station	Percent relative humidity																			
	April				May				June				July				August			
	0200	0800	1400	2000	0200	0800	1400	2000	0200	0800	1400	2000	0200	0800	1400	2000	0200	0800	1400	2000
Galena	70	72	62	68	77	65	51	58	76	64	49	54	82	73	59	64	85	82	65	75
Northway	78	62	49	68	81	55	43	61	83	60	48	61	87	67	50	66	89	71	52	75
McGrath	77	70	55	66	82	66	49	60	84	67	50	59	88	75	57	66	92	86	66	79
Fairbanks	74	63	47	61	77	57	42	55	82	62	45	57	88	70	52	66	91	78	57	77
Anchorage	75	67	53	67	77	64	50	63	75	68	57	65	85	74	62	72	86	78	65	77
Naknek 1/	86	80	64	78	86	73	58	75	88	78	59	72	91	82	60	75	92	86	64	81
Bethel	87	84	74	83	89	79	64	74	90	80	64	70	93	87	69	77	96	93	77	87

1/ 3 years of data only

Source: United States Weather Bureau. Local climatological data, Alaska, 1958.

Table 25.--Relative humidity percent by hour of day, and number of days in each temperature class

(Av. 1950-58)

ANCHORAGE

Time of day	Relative humidity percent				
	10-19	20-29	30-39	40-49	50+
			April		
0300		0.1		1.3	28.6
0900		.2	1.1	5.0	23.7
1200		.2	3.2	9.3	17.3
1500		.6	4.3	9.0	16.1
1800		.2	2.2	6.1	21.5
2100*	0.1		.7	1.8	27.4
Av.		.2	1.9	5.4	22.5
			May		
0300			.1	.7	30.2
0900		.2	1.6	6.3	22.9
1200		.6	4.7	11.6	14.1
1500		1.1	6.7	10.2	13.0
1800		.7	2.6	8.3	19.4
2100		.1	.6	2.9	27.4
Av.		.4	2.7	6.7	21.2
			June		
0300				.3	29.7
0900			.3	2.6	27.1
1200		.4	1.1	5.6	22.9
1500		.6	1.6	8.4	19.4
1800			1.6	6.4	22.0
2100			.3	1.4	28.3
Av.		.2	.8	4.1	24.9
			July		
0300					31.0
0900				1.7	29.3
1200			.4	4.6	26.0
1500		.2	.9	5.3	24.6
1800			.8	4.1	26.1
2100			.2	.6	30.2
Av.			.4	2.7	27.9
			August		
0300				.1	30.9
0900				.8	30.2
1200			.4	2.7	27.9
1500		.1	.7	4.0	26.2
1800			.2	2.6	28.2
2100				.3	30.7
Av.			.2	1.8	29.0

BETHEL

Time of day	Relative humidity percent				
	10-19	20-29	30-39	40-49	50+
			April		
0300					30.0
0900				0.1	29.9
1200			0.1	1.2	28.7
1500			.1	1.2	28.7
1800				.8	29.2
2100					30.0
Av.				.6	29.4
			May		
0300					31.0
0900			.1	.7	30.2
1200		0.2	.8	4.4	25.6
1500		.3	1.8	4.8	24.1
1800	0.1	.1	.8	3.4	26.6
2100		.1	.1	.7	30.1
Av.		.1	.6	2.3	28.0
			June		
0300				.1	29.9
0900				.6	29.4
1200			1.3	2.4	26.3
1500		.4	1.6	4.4	23.6
1800		.2	.8	4.1	24.9
2100				.6	29.4
Av.		.1	.6	2.0	27.3
			July		
0300					31.0
0900				.1	30.9
1200			.1	2.3	28.6
1500			.8	3.6	26.6
1800			.8	2.8	27.4
2100				.1	30.9
Av.			.3	1.5	29.2
			August		
0300					31.0
0900					31.0
1200				.2	30.8
1500			.1	.6	30.3
1800			.1	.7	30.2
2100					31.0
Av.				.3	30.7

BETTLES

Time of day	Relative humidity percent				
	10-19	20-29	30-39	40-49	50+
			April		
0300			0.1	0.2	29.7
0900			.1	2.9	27.0
1200			.9	4.2	24.9
1500			.7	4.8	24.5
1800			.1	3.4	26.5
2100			.1	.6	29.3
Av.			.3	2.7	27.0
			May		
0300		0.1		.3	30.7
0900			.6	5.2	25.2
1200		.2	3.4	6.8	20.6
1500		.8	3.6	7.4	19.2
1800		.7	3.4	6.9	20.0
2100			.9	3.9	26.2
Av.		.3	2.0	5.1	23.6
			June		
0300				.4	29.6
0900		.1	1.9	5.1	22.9
1200		.2	5.1	8.1	16.6
1500		1.8	6.2	6.4	15.6
1800		2.2	4.7	5.6	17.5
2100		.3	1.8	2.8	25.1
Av.		.8	3.3	4.7	21.2
			July		
0300				.1	30.9
0900				1.8	29.2
1200		.1	2.8	6.9	21.2
1500		1.1	4.6	6.3	19.0
1800		.9	3.9	6.0	20.2
2100			.7	1.3	29.0
Av.		.4	2.0	3.7	24.9
			August		
0300					31.0
0900				.1	30.9
1200			.3	2.0	28.7
1500			.6	4.0	26.4
1800			.8	1.3	28.9
2100					31.0
Av.			.3	1.2	29.5

BIG DELTA

Time of day	Relative humidity percent				
	10-19	20-29	30-39	40-49	50+
			April		
0300			0.1	0.9	29.0
0900		0.2	2.0	7.7	20.1
1200	0.1	1.6	4.1	6.7	15.5
1500		1.6	4.9	8.7	14.8
1800		.2	2.8	5.9	21.1
2100			.4	3.1	26.5
Av.		.6	2.4	5.8	21.2
			May		
0300		.1	.8	1.9	28.2
0900		1.4	6.7	9.7	13.2
1200	.1	3.9	9.9	9.0	8.1
1500	.1	4.2	10.9	7.2	5.6
1800		2.3	8.5	6.9	13.3
2100			1.8	7.6	21.6
Av.		2.0	6.4	7.1	15.5
			June		
0300		.1	.3	1.5	27.8
0900		.9	4.3	7.1	17.7
1200	.1	2.7	6.8	8.9	11.5
1500	.1	4.1	6.8	7.8	11.2
1800	.2	2.1	5.8	7.8	14.1
2100		.1	2.0	5.3	22.6
Av.	.1	1.7	4.3	6.4	17.5
			July		
0300		.1	.2	1.2	29.5
0900		.1	1.6	6.6	22.7
1200		1.6	5.2	8.3	15.9
1500	.1	2.2	6.7	7.7	14.3
1800		.9	5.4	7.2	17.5
2100		.2	1.4	3.0	26.4
Av.		.8	3.4	5.7	21.1
			August		
0300			.1	1.4	29.5
0900			.7	4.4	25.9
1200		.3	4.2	8.0	18.5
1500		.4	5.3	8.7	16.6
1800		.3	2.2	6.6	21.9
2100			.7	2.8	27.5
Av.		.2	2.2	5.3	23.3

FAIRBANKS

Time of day	Relative humidity				
	10-19	20-29	30-39	40-49	50+
			April		
0300			0.1	0.7	29.2
0900		0.2	2.4	6.2	21.2
1200		1.2	4.3	9.7	14.8
1500		2.3	6.1	8.8	12.8
1800		.7	4.3	8.9	16.1
2100			.4	3.2	26.3
Av.		.7	2.9	6.3	20.1
			May		
0300				1.0	30.0
0900		.8	7.0	8.7	14.6
1200	0.3	5.0	8.4	8.4	8.8
1500	.4	6.3	10.3	7.3	6.6
1800	.7	3.7	8.8	9.4	8.4
2100		.6	1.0	5.7	23.8
Av.	.2	2.7	5.9	6.8	15.4
			June		
0300			.3	.9	28.8
0900	.1	.6	3.7	7.1	18.5
1200	.1	2.9	7.7	8.7	10.6
1500	.7	4.4	7.9	8.1	8.9
1800	.4	3.0	7.2	7.9	11.5
2100			1.9	4.4	23.7
Av.	.2	1.8	4.8	6.2	17.0
			July		
0300					31.0
0900		.1	1.2	4.0	25.7
1200		1.7	5.2	7.0	17.1
1500	.3	3.2	6.0	6.3	15.2
1800		2.2	5.2	7.0	16.6
2100			.6	1.0	29.4
Av.	.1	1.2	3.0	4.2	22.5
			August		
0300					31.0
0900			.1	1.2	29.7
1200		.6	2.1	6.7	21.6
1500		.9	5.6	6.9	17.6
1800			1.4	6.1	23.5
2100				.1	30.9
Av.		.3	1.5	3.5	25.7

FT. YUKON

Time of day	Relative humidity percent				
	10-19	20-29	30-39	40-49	50+
			April		
0300			0.1	0.4	28.5
0900			.1	4.3	25.6
1200			1.4	6.7	21.9
1500		0.1	2.8	6.9	20.2
1800		Data missing			
2100			.6	2.0	26.6
Av.		.0	1.0	4.1	24.6
			May		
0300		.1	.1	1.4	29.4
0900		.3	2.2	7.9	20.6
1200		.6	5.1	10.6	14.7
1500		1.3	6.8	10.1	12.8
1800		Data missing			
2100		.2	1.9	5.8	23.1
Av.		.5	3.2	7.2	20.1
			June		
0300		.1	1.0	4.0	24.9
0900		.1	3.9	8.4	17.6
1200		.4	6.0	10.4	13.2
1500		1.0	6.7	12.0	10.3
1800		Data missing			
2100		.3	2.3	6.7	20.7
Av.		.4	4.0	8.3	17.3
			July		
0300			.2	1.3	29.5
0900		.2	2.2	8.2	20.4
1200		.6	3.3	12.0	15.1
1500		.7	4.9	10.7	14.7
1800		Data missing			
2100		.4	2.2	5.7	22.7
Av.		.4	2.5	7.6	20.5
			August		
0300				.2	30.8
0900			.7	2.6	27.7
1200		.1	.9	8.7	21.3
1500		.2	1.9	8.9	20.0
1800		Data missing			
2100			.3	1.8	28.9
Av.		.1	.8	4.4	25.7

Table 25.--Relative humidity percent by hour of day, and number of days in each temperature class--Continued

(Av. 1950-58)

GALENA

Time of day	Relative humidity percent 10-19	20-29	30-39	40-49	50/
April					
0300					30.0
0900				0.9	29.1
1200		0.2	0.4	4.2	25.2
1500		.2	1.4	4.7	23.7
1800			1.2	3.7	25.1
2100			.1	.6	29.3
Av.		.1	.5	2.3	27.1
May					
0300				1.0	30.0
0900		.8	2.1	6.0	22.1
1200	0.1	1.8	6.7	7.1	15.3
1500	.4	2.9	6.9	7.0	13.8
1800	.3	2.6	5.6	7.9	14.6
2100		.4	3.3	6.2	21.1
Av.	.1	1.4	4.1	5.9	19.5
June					
0300				.3	29.7
0900		.4	1.6	4.3	23.7
1200	.1	1.8	4.2	9.1	14.8
1500	.4	2.9	4.8	8.1	13.8
1800	.2	2.9	4.9	6.8	15.2
2100		1.1	3.2	3.7	22.0
Av.	.1	1.5	3.1	5.4	19.9
July					
0300					31.0
0900			.5	2.8	27.7
1200		.4	2.6	7.4	20.6
1500		1.2	4.9	7.4	17.5
1800		.6	5.2	6.4	18.8
2100			.6	2.2	28.2
Av.		.4	2.3	4.4	23.9
August					
0300					31.0
0900				.8	30.2
1200		.1	1.0	2.8	27.1
1500		.4	2.1	2.8	25.9
1800		.1	1.2	2.4	27.3
2100				.9	30.1
Av.		.1	.7	1.6	28.6

GULKANA

Time of day	Relative humidity percent 10-19	20-29	30-39	40-49	50/
April					
0300			0.2	0.1	29.7
0900			.1	3.9	26.0
1200		0.1	2.6	9.4	17.9
1500		.6	3.2	10.0	16.2
1800		.2	.9	6.1	22.8
2100		.1		.9	29.0
Av.		.2	1.2	5.0	23.6
May					
0300			.1	.1	30.8
0900	0.1	.7	1.9	9.0	19.3
1200	.2	2.6	7.0	7.9	13.3
1500	.2	3.8	8.0	7.3	11.7
1800	.2	1.4	4.9	7.3	17.2
2100			.4	2.4	28.2
Av.	.1	1.4	3.7	5.7	20.4
June					
0300				.1	29.9
0900		.2	2.6	8.3	18.9
1200	.2	3.4	7.4	8.7	10.3
1500	.9	4.8	8.2	6.6	9.5
1800	.3	3.2	5.4	8.4	12.7
2100		.1	1.4	4.6	23.9
Av.	.2	2.0	4.2	6.1	17.5
July					
0300					31.0
0900				1.9	29.1
1200		.9	4.8	8.3	17.0
1500	.1	2.3	6.7	8.3	13.6
1800		2.2	4.4	6.6	17.8
2100			.3	2.6	28.1
Av.		.9	2.7	4.6	22.8
August					
0300					31.0
0900				1.9	29.1
1200		.4	2.2	6.1	22.2
1500		.9	4.6	8.1	17.4
1800		.9	2.3	4.1	23.7
2100				.3	30.7
Av.		.4	1.5	3.4	25.7

HOMER

Time of day	Relative humidity percent 10-19	20-29	30-39	40-49	50/
April					
0300			0.2	0.4	29.4
0900		0.1	.6	1.3	28.0
1200			.3	1.7	28.0
1500			.8	2.4	26.8
1800		.1	.3	1.3	28.3
2100	0.1			.8	29.1
Av.			.4	1.3	28.3
May					
0300				.1	30.9
0900			.1	.6	30.3
1200				1.4	29.6
1500		.1	.1	1.0	29.8
1800				.6	30.4
2100				.1	30.9
Av.				.6	30.4
June					
0300					30.0
0900			.1		29.9
1200		.1		.4	29.5
1500		.1	.1	.2	29.6
1800				.4	29.6
2100					30.0
Av.				.2	29.8
July					
0300					31.0
0900				.1	30.9
1200				.2	30.8
1500			.3	.1	30.6
1800				.2	30.8
2100					31.0
Av.			.1	.1	30.8
August					
0300					31.0
0900			.1		30.9
1200				.3	30.7
1500			.2	.2	30.6
1800				.1	30.9
2100					31.0
Av.			.1	.1	30.8

ILIAMNA

Time of day	Relative humidity percent 10-19	20-29	30-39	40-49	50/
April					
0300				0.1	29.9
0900			0.2	.3	29.5
1200			.2	1.1	28.7
1500			.1	1.1	28.8
1800				.2	29.8
2100				.1	29.9
Av.			.1	.5	29.4
May					
0300					31.0
0900				.6	30.4
1200		0.1	.1	1.8	29.0
1500	0.1	.1	.8	1.2	28.8
1800		.1	.2	1.0	29.7
2100				.3	30.7
Av.		.1	.2	.8	29.9
June					
0300				.1	29.9
0900		.1		.2	29.7
1200		.1	.7	1.2	28.0
1500		.1	1.1	3.9	24.9
1800		.2	.9	2.4	26.5
2100			.2	.7	29.1
Av.		.1	.5	1.4	28.0
July					
0300					31.0
0900				.7	30.3
1200			.3	1.6	29.1
1500		.1	.7	2.8	27.4
1800			.7	2.2	28.1
2100				.1	30.9
Av.			.3	1.2	29.5
August					
0300					31.0
0900				.1	30.9
1200			.1	.9	30.0
1500		.1		1.3	29.6
1800			.1	.6	30.3
2100				.1	30.9
Av.				.5	30.5

KOTZEBUE

Time of day	Relative humidity percent 10-19	20-29	30-39	40-49	50/
April					
0300			0.1	0.1	29.8
0900				.1	29.9
1200					30.0
1500		0.2		.4	29.4
1800		.1		.1	29.8
2100					30.0
Av.		.1		.1	29.8
May					
0300					31.0
0900			.1	.7	30.2
1200			.2	.8	30.0
1500			.1	1.0	29.9
1800				.1	30.9
2100					31.0
Av.			.1	.4	30.5
June					
0300					30.0
0900			.4	.6	29.0
1200			.3	.7	29.0
1500		.1	.3	.4	29.2
1800			.1	.6	29.3
2100				.3	29.7
Av.			.2	.4	29.4
July					
0300					31.0
0900					31.0
1200				.8	30.2
1500			.1	.9	30.0
1800				.3	30.7
2100				.1	30.9
Av.				.4	30.6
August					
0300					31.0
0900				.2	30.8
1200		.1		.2	30.7
1500			.1	.1	30.8
1800				.3	30.7
2100					31.0
Av.				.1	30.9

LAKE MINCHUMINA

Time of day	Relative humidity percent 10-19	20-29	30-39	40-49	50/
April					
0300			0.2	0.4	29.4
0900		0.1	.2	2.7	27.0
1200		.6	2.1	5.9	21.4
1500		.6	3.3	5.9	20.2
1800		.2	2.0	7.4	20.4
2100			.8	3.2	26.0
Av.		.2	1.4	4.2	24.0
May					
0300			.1	.9	30.0
0900		.3	1.4	7.0	22.3
1200		1.4	6.2	8.8	14.6
1500		3.4	4.4	10.0	13.2
1800	0.2	1.3	4.6	8.1	16.8
2100		.3	1.6	6.2	22.9
Av.		1.1	3.1	6.8	20.0
June					
0300				1.6	28.4
0900			1.4	6.3	22.3
1200		2.0	5.8	8.1	14.1
1500	.1	2.3	7.8	6.3	13.5
1800		.9	4.7	7.3	17.1
2100		.1	1.3	4.4	24.2
Av.		.9	3.5	5.7	19.9
July					
0300				.3	30.7
0900		.1	.7	2.8	27.4
1200		.4	3.4	5.9	21.3
1500		1.1	5.4	6.7	17.8
1800		.3	4.8	5.6	20.3
2100			.8	2.7	27.5
Av.		.3	2.5	4.0	24.2
August					
0300					31.0
0900				.7	30.3
1200			.2	3.2	27.6
1500		.1	.9	4.4	25.6
1800			.1	2.6	28.3
2100				.2	30.8
Av.			.2	1.9	28.9

Table 25.--Relative humidity percent by hour of day, and number of days in each temperature class--Continued

(Av. 1950-58)

[illegible]

Time of day	10-19	20-29	30-39	40-49	50+
April					
0300				0.1	29.9
0900		0.1		2.2	27.7
1200		.2	2.6	6.6	20.6
1500		.4	3.1	8.2	18.3
1800		.1	1.7	7.3	21.9
2100			.1	.2	29.7
Av.		.1	1.3	4.1	24.5
May					
0300				.3	30.7
0900		.3	1.2	7.4	21.7
1200	0.2	1.4	6.1	8.3	15.0
1500	.3	2.3	7.7	9.2	11.5
1800	.1	2.6	5.5	7.8	14.9
2100		.2	1.4	4.3	25.1
Av.	.1	1.1	3.8	6.2	19.8
June					
0300					30.0
0900		.1	1.6	5.6	22.7
1200		1.4	5.3	8.1	15.2
1500	.1	2.5	7.0	6.5	13.5
1800	.1	2.3	5.5	5.4	16.4
2100		.2	1.9	3.4	24.5
Av.		1.1	3.6	4.9	20.4
July					
0300					31.0
0900				2.3	28.7
1200		.1	3.5	6.2	21.3
1500		1.0	4.3	6.8	18.9
1800		.7	4.1	4.7	21.4
2100			.6	2.1	28.3
Av.		.3	2.0	3.7	25.0
August					
0300					31.0
0900				.4	30.6
1200			.7	2.9	27.4
1500		.1	1.7	4.0	25.2
1800		.1	.4	2.8	27.7
2100				.1	30.9
Av.			.5	1.7	28.8

[illegible]

Time of day	10-19	20-29	30-39	40-49	50+
April					
0300					30.0
0900				0.6	29.4
1200			0.9	2.4	26.7
1500		0.1	1.1	2.3	26.5
1800			.1	1.7	28.2
2100					30.0
Av.			.4	1.2	28.4
May					
0300					31.0
0900			.1	1.4	29.5
1200		.4	1.5	5.3	24.0
1500		.2	1.1	5.3	24.4
1800		.2	.4	3.0	27.4
2100					31.0
Av.		.1	.5	2.5	27.9
June					
0300				.1	29.9
0900				.9	29.1
1200		.1	1.6	3.1	25.2
1500		.6	1.9	5.6	21.9
1800		.2	1.1	2.4	26.3
2100				.1	29.9
Av.		.2	.8	2.0	27.0
July					
0300					31.0
0900				.2	30.8
1200			.9	3.1	27.0
1500		.2	1.4	4.4	25.0
1800			.2	2.2	28.6
2100					31.0
Av.			.4	1.7	28.9
August					
0300					31.0
0900					31.0
1200			.3	1.2	29.5
1500		.1	.3	2.3	28.3
1800				.6	30.4
2100					31.0
Av.			.1	.7	30.2

[illegible]

Time of day	10-19	20-29	30-39	40-49	50+
April					
0300			0.2	0.2	29.6
0900	0.1	0.2	2.1	4.3	23.3
1200		1.1	3.9	9.1	15.9
1500	.1	1.1	4.6	10.1	14.1
1800	.1	.3	2.1	5.1	22.4
2100			.1	1.3	28.6
Av.	.1	.4	2.2	5.0	22.3
May					
0300			.1	.1	30.8
0900	.1	.9	3.3	8.1	18.6
1200	.4	3.8	5.4	7.0	11.4
1500	.3	4.9	8.3	6.7	10.8
1800	.2	1.5	5.5	7.4	15.8
2100		.1	.3	1.2	28.7
Av.	.2	1.9	4.9	5.2	18.8
June					
0300					30.0
0900		.6	3.2	9.0	17.2
1200	.1	1.9	8.6	7.6	11.8
1500	.3	2.1	8.3	7.6	11.7
1800	.1	.9	6.3	6.8	15.9
2100			.4	2.9	26.7
Av.	.1	.9	4.5	5.6	18.9
July					
0300					31.0
0900		.2	1.7	5.4	23.7
1200		1.4	5.7	9.3	14.6
1500	.1	2.1	6.1	9.0	13.7
1800	.1	1.2	3.8	7.2	18.7
2100			.2	1.6	29.2
Av.		.5	2.9	5.4	21.9
August					
0300					31.0
0900			.1	3.4	27.5
1200		.6	3.0	9.8	17.6
1500		.8	4.5	9.4	16.3
1800		.1	1.1	5.4	24.4
2100					31.0
Av.		.2	1.5	4.7	24.6

SUMMIT

Time of day	10-19	20-29	30-39	40-49	50+
April					
0300				0.1	29.9
0900			0.3	1.4	28.3
1200			.7	3.4	25.9
1500		0.4	1.2	4.4	24.0
1800			.2	2.1	27.7
2100			.3	.2	29.5
Av.		.1	.4	1.9	27.6
May					
0300				.2	30.8
0900		.4	1.3	3.3	26.0
1200	0.1	.7	1.7	4.8	23.7
1500	.1	.2	3.0	5.6	22.1
1800		.4	2.4	4.2	24.0
2100			.1	1.4	29.5
Av.		.3	1.4	3.3	26.0
June					
0300					30.0
0900		.2	1.1	4.0	24.7
1200	.1	1.0	2.9	5.7	20.3
1500	.1	1.2	2.9	6.0	19.8
1800		1.2	2.6	4.4	21.8
2100		.1	.2	1.7	28.0
Av.		.6	1.6	3.7	24.1
July					
0300				.1	30.9
0900		.1	.2	1.6	29.1
1200		.5	1.6	3.7	25.2
1500		.7	3.7	4.1	22.5
1800		.7	1.8	3.4	25.1
2100				.3	30.7
Av.		.3	1.2	2.2	27.3
August					
0300					31.0
0900				.9	30.1
1200		.1	.7	3.0	27.2
1500		.1	1.1	2.9	26.9
1800			.7	1.1	29.2
2100					31.0
Av.			.4	1.3	29.3

TANANA

Time of day	10-19	20-29	30-39	40-49	50+
April					
0300			0.3	1.0	28.7
0900			.4	2.8	26.8
1200	0.1	0.4	1.0	5.2	23.3
1500	.1	.3	1.8	5.9	21.9
1800		.1	1.0	3.9	25.0
2100				1.6	28.4
Av.		.1	.8	3.4	25.7
May					
0300				.9	30.1
0900		.7	3.2	6.2	20.9
1200		2.7	4.8	10.6	12.9
1500	.3	3.2	7.0	8.2	12.3
1800	.3	2.2	4.6	8.7	15.2
2100		.1	1.1	4.2	25.6
Av.	.1	1.5	3.4	6.5	19.5
June					
0300		.1		.2	29.7
0900		.4	1.4	5.4	22.8
1200		1.4	6.2	7.3	15.1
1500	.1	2.9	5.7	8.6	12.7
1800		2.2	4.2	7.1	16.5
2100		.3	1.2	2.8	25.7
Av.		1.2	3.1	5.3	20.4
July					
0300					31.0
0900				2.2	28.8
1200		.3	2.9	6.0	21.8
1500		1.2	3.6	6.9	19.3
1800		.2	3.3	5.3	22.2
2100			.1	1.0	29.9
Av.		.3	1.6	3.6	25.5
August					
0300					31.0
0900				.2	30.8
1200			1.1	1.9	28.0
1500		.3	1.6	4.4	24.7
1800			.4	2.1	28.5
2100					31.0
Av.		.1	.5	1.4	29.0

UNALAKLEET

Time of day	10-19	20-29	30-39	40-49	50+
April					
0300				0.3	29.7
0900			0.3	1.4	28.3
1200			.6	1.3	28.1
1500			.4	.9	28.7
1800				.8	29.2
2100				.2	29.8
Av.			.2	.8	29.0
May					
0300			.1	.3	30.6
0900		0.4	1.4	2.4	26.8
1200	0.1	.4	1.2	3.1	26.2
1500		.6	1.9	2.2	26.3
1800		.6	1.0	2.4	27.0
2100				1.2	29.8
Av.		.3	.9	2.0	27.8
June					
0300			.1		29.9
0900			.6	1.2	28.2
1200		.1	.4	1.1	28.4
1500			.8	1.7	27.5
1800		.2	.2	1.1	28.5
2100			.3	.4	29.3
Av.		.1	.4	.9	28.6
July					
0300					31.0
0900			.2	.3	30.5
1200		.1	.2	.6	30.1
1500			.1	.4	30.5
1800				.4	30.6
2100				.1	30.9
Av.			.1	.3	30.6
August					
0300					31.0
0900				.2	30.8
1200			.3	.2	30.5
1500			.3	.1	30.6
1800				.4	30.6
2100				.1	30.9
Av.			.1	.2	30.7

Source: United States Weather Bureau coded data.

Table 26.--Sunrise, sunset, and duration of daylight

Date	Fort Yukon, Alaska				Anchorage, Alaska				Missoula, Montana			
	Time of sunrise	Time of sunset	Duration of daylight		Time of sunrise	Time of sunset	Duration of daylight		Time of sunrise	Time of sunset	Duration of daylight	
			Hrs	Mins			Hrs	Mins			Hrs	Mins
April 1	0456	1836	13	40	0524	1843	13	19	0616	1905	12	49
11	0416	1911	14	55	0452	1910	14	18	0556	1919	13	23
21	0335	1947	16	12	0422	1935	15	13	0538	1933	13	55
May 1	0255	2025	17	30	0351	2002	16	11	0521	1946	14	25
11	0213	2105	18	52	0323	2029	17	06	0506	1959	14	53
21	0128	2150	20	22	0258	2055	17	57	0454	2012	15	18
June 1	0033	2252	22	19	0236	2119	18	43	0445	2023	15	38
11	1/SAH	SAH	24	00	0222	2135	19	13	0441	2031	15	50
21	SAH	SAH	24	00	0218	2143	19	25	0441	2034	15	53
July 1	SAH	SAH	24	00	0225	2140	19	15	0444	2035	15	51
11	0034	2252	22	18	0240	2127	18	47	0452	2030	15	38
21	0129	2200	20	31	0301	2107	18	06	0503	2022	15	19
Aug. 1	0216	2115	18	59	0329	2040	17	11	0515	2009	14	54
11	0257	2034	17	37	0355	2012	16	17	0528	1954	14	26
21	0333	1952	16	19	0421	1942	15	21	0540	1937	13	57
Sept. 1	0412	1908	14	56	0448	1907	14	19	0555	1916	13	21
11	0445	1828	13	43	0514	1836	13	22	0608	1857	12	49
21	0518	1748	12	30	0538	1804	12	26	0621	1836	12	15

1/ SAH - Sun above horizon all day.

Source: United States mimeographed data.

Table 27.--Wind direction by hour of day, and number of days per month in each direction class

(Av. 1950-58)

ANCHORAGE

Time of day	Wind direction (from) N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	5.9	2.7	2.3	2.9	4.2	1.7	1.7	2.2	6.4
0900	7.3	6.3	.7	.6	2.4	1.7	4.0	5.4	1.6
1200 1/	6.2	2.6	1.0	1.6	2.7	2.3	4.8	7.4	.8
1500	5.6	1.9	1.1	2.2	4.0	2.2	5.9	6.8	.3
1800 1/	4.4	1.6	.7	2.4	4.9	3.7	4.4	5.9	1.3
2100	3.8	2.7	2.0	4.1	6.3	2.9	1.9	2.7	3.6
Av.	5.5	3.0	1.3	2.3	4.1	2.4	3.8	5.1	2.3
May									
0300	2.7	2.2	2.7	5.8	7.8	1.4	1.0	2.0	5.4
0900	4.3	2.2	.6	2.4	3.9	2.2	6.0	8.2	1.2
1200	3.2	.8	.6	3.6	5.9	2.4	7.0	6.7	.8
1500	1.6	.8	.7	4.9	9.0	2.2	6.6	4.9	.3
1800	1.7	.1	.3	5.7	9.1	3.2	5.4	4.7	.8
2100	1.8	1.7	.3	5.4	11.0	3.4	1.9	1.7	3.8
Av.	2.6	1.3	.9	4.6	7.8	2.5	4.6	4.7	2.0
June									
0300	1.3	2.2	1.4	3.1	8.2	4.0	1.3	1.6	6.9
0900	4.0	2.1	.6	1.3	3.0	2.9	6.7	8.4	1.0
1200	3.3	.4	.3	2.0	3.7	2.2	8.9	8.8	.4
1500	2.6	.4	.1	2.4	5.8	3.2	9.0	6.3	.2
1800	2.0	.6	.2	3.6	6.7	5.3	7.2	4.2	.2
2100	1.7	.9	1.0	4.1	9.9	4.2	2.9	1.4	3.9
Av.	2.5	1.1	.6	2.8	6.2	3.6	6.0	5.1	2.1
July									
0300	1.9	2.8	2.4	3.6	7.0	1.9	1.3	1.1	9.0
0900	4.9	2.2	.8	1.8	3.1	3.1	6.7	6.4	2.0
1200	3.8	2.0	.2	2.0	1.9	2.6	9.7	7.8	1.0
1500 1/	3.3	1.0	.2	2.1	3.0	3.8	8.7	7.4	.8
1800	3.0	.7	.4	3.1	4.4	4.9	7.7	5.6	1.2
2100	1.9	.7	1.3	5.1	7.6	4.6	2.3	2.1	5.3
Av.	3.1	1.6	.9	3.0	4.5	3.5	6.0	5.1	3.2
August									
0300	3.6	2.9	2.8	4.4	5.0	1.1	.8	1.3	9.1
0900	6.6	3.9	.9	1.3	4.4	2.7	3.1	4.8	3.4
1200	5.8	4.0	.7	1.6	2.2	3.2	4.0	8.2	1.3
1500	4.1	2.2	.4	2.4	3.9	2.7	7.2	6.3	1.8
1800	2.7	2.0	.7	2.6	5.9	3.2	5.4	6.3	2.2
2100	2.2	1.0	3.3	6.0	6.7	2.6	1.6	1.6	6.0
Av.	4.1	2.6	1.5	3.0	4.7	2.6	3.7	4.8	4.0

BETHEL

Time of day	Wind direction (from) N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	5.2	3.1	3.4	2.6	3.2	1.8	1.1	6.9	2.7
0900	4.6	3.4	4.1	2.9	3.3	1.6	2.1	6.0	2.0
1200	5.6	1.8	3.3	3.4	3.9	1.8	2.3	7.5	.4
1500	5.0	1.7	3.4	3.1	3.6	2.1	2.0	8.4	.7
1800	5.2	1.8	3.3	3.2	3.4	1.7	2.6	8.2	.6
2100	4.5	2.1	3.4	2.8	3.8	1.1	2.4	7.9	2.0
Av.	5.0	2.3	3.5	3.0	3.5	1.7	2.1	7.5	1.4
May									
0300	4.1	3.1	6.0	3.3	3.4	1.9	1.2	5.7	2.3
0900	4.0	3.1	6.8	5.0	4.1	1.8	2.3	3.6	.3
1200	3.9	3.2	4.7	4.9	4.8	2.2	1.9	5.2	.2
1500	3.9	1.6	4.5	3.6	6.1	2.0	2.1	6.6	.6
1800	4.2	1.6	4.2	3.9	4.8	2.4	3.1	6.6	.2
2100	4.0	2.0	4.8	3.7	3.8	1.8	3.3	6.3	1.3
Av.	4.0	2.4	5.2	4.1	4.5	2.0	2.3	5.7	.8
June									
0300	2.2	1.7	3.9	4.4	4.9	3.4	1.8	5.9	1.8
0900	2.4	2.9	3.2	4.3	6.6	3.1	2.0	4.8	.7
1200	3.1	2.0	3.6	3.0	6.9	4.1	3.2	4.0	.1
1500	2.6	2.1	2.3	2.3	7.0	4.7	2.7	5.9	.4
1800	2.6	1.6	2.2	2.3	5.8	4.3	5.0	6.0	.2
2100	2.0	1.6	2.6	1.8	6.1	4.7	5.2	5.1	1.0
Av.	2.5	2.0	3.0	3.0	6.2	4.0	3.3	5.3	.7
July									
0300	2.6	1.7	2.2	3.6	6.7	3.0	2.6	5.5	3.1
0900	3.3	3.2	2.4	3.1	8.0	3.2	2.1	4.4	1.3
1200	2.9	1.6	2.3	2.8	9.5	3.4	2.8	5.0	.7
1500	2.4	2.1	1.7	1.6	9.5	5.2	3.0	5.2	.3
1800	2.6	1.3	1.9	1.9	7.7	6.2	3.8	4.6	1.0
2100	1.8	1.3	1.6	2.0	6.8	6.7	4.9	4.7	1.2
Av.	2.6	1.9	2.0	2.5	8.0	4.6	3.2	4.9	1.3
August									
0300	2.0	1.6	3.3	4.4	6.9	4.1	2.4	3.5	2.8
0900	1.9	2.6	3.2	4.3	7.2	5.1	2.3	3.0	1.4
1200	2.6	2.4	2.6	3.4	9.6	3.9	2.2	3.6	.7
1500	2.6	2.6	1.8	3.0	9.0	5.6	2.9	3.4	.2
1800	1.4	3.1	1.3	3.1	8.1	5.1	3.3	5.2	.4
2100	1.9	1.7	1.1	3.6	8.2	4.9	3.0	3.6	3.0
Av.	2.1	2.3	2.2	3.6	8.2	4.8	2.7	3.7	1.4

BETTLES

Time of day	Wind direction (from) N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	8.0	0.5	0.4	1.9	0.8	0.2	2.0	12.2	4.0
0900	7.6	2.0	.2	3.0	1.4	.4	2.7	8.3	4.4
1200	6.0	4.3	1.7	4.7	2.4	1.3	1.6	3.8	4.2
1500	5.6	4.8	2.9	5.7	2.7	1.3	1.2	2.2	3.6
1800	5.2	5.1	2.0	4.0	1.6	1.1	2.0	2.9	6.1
2100	7.1	1.9	1.0	1.9	1.3	.6	3.0	6.9	6.3
Av.	6.6	3.1	1.4	3.5	1.7	.8	2.1	6.0	4.8
May									
0300	5.6	1.4	.3	1.9	1.4	.9	3.6	10.2	5.7
0900	7.6	3.1	1.9	4.3	2.7	2.7	1.4	2.7	4.6
1200	4.9	4.2	3.8	4.8	3.7	3.2	2.0	2.1	2.3
1500	4.4	4.9	4.0	4.2	2.9	3.3	3.0	1.9	2.4
1800	4.7	5.3	4.2	3.8	2.8	4.0	1.6	2.4	2.2
2100	5.9	4.2	2.8	3.4	1.3	2.4	2.4	5.0	3.6
Av.	5.5	3.9	2.8	3.7	2.5	2.8	2.3	4.0	3.5
June									
0300	5.3	.7	1.3	4.9	1.8	1.0	1.9	6.3	6.8
0900	3.3	.9	2.0	3.7	5.0	6.0	2.2	3.0	3.9
1200	3.0	1.4	2.1	3.7	5.9	6.2	2.0	2.3	3.4
1500	3.0	1.7	2.3	3.6	3.7	8.4	1.9	2.0	3.4
1800	3.0	1.2	2.4	3.4	4.2	8.4	2.6	2.9	1.9
2100	4.1	1.2	2.0	3.8	4.0	5.4	1.9	2.8	4.8
Av.	3.6	1.2	2.0	3.9	4.1	5.9	2.1	3.2	4.0
July									
0300	3.1	.7	2.0	8.6	2.2	.7	.8	6.2	6.7
0900	4.0	.4	.9	6.0	6.2	4.0	2.0	2.6	4.9
1200	1.8	.9	1.9	4.8	6.6	8.0	1.0	1.7	4.3
1500	1.7	1.2	1.0	3.9	7.7	9.4	1.9	1.4	2.8
1800	1.4	.9	.8	5.7	6.7	9.2	2.3	1.7	2.3
2100	2.2	.6	1.3	5.4	6.2	5.3	1.1	3.3	5.6
Av.	2.4	.8	1.3	5.8	5.9	6.1	1.5	2.8	4.4
August									
0300	4.3	.7	1.3	6.9	1.7	.7	1.6	8.4	5.4
0900	5.2	1.4	1.7	5.3	5.9	2.0	.8	3.9	4.8
1200	3.7	2.0	1.6	4.3	7.0	5.3	2.2	2.0	2.9
1500	2.4	2.0	2.0	3.9	8.0	5.6	2.0	1.8	3.3
1800	3.1	1.6	2.1	3.8	8.1	5.0	1.9	2.0	3.4
2100	4.1	1.1	2.4	6.0	4.2	1.9	1.8	2.3	7.2
Av.	3.8	1.5	1.9	5.0	5.8	3.4	1.7	3.4	4.5

BIG DELTA

Time of day	Wind direction (from) N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	0.2	0.6	3.7	2.1	7.1	7.0	3.1	.6	5.6
0900	1.6	2.2	9.3	.9	3.3	1.2	5.0	1.2	5.3
1200	1.6	1.8	7.0	1.2	4.6	1.8	4.8	2.1	5.1
1500	1.1	1.8	5.6	1.1	5.0	2.7	6.6	1.9	4.2
1800	.6	1.0	4.6	1.7	5.6	5.2	6.8	2.1	2.4
2100		.8	4.1	1.0	7.3	8.8	4.3	.6	3.1
Av.	.8	1.4	5.8	1.3	5.5	4.4	5.1	1.4	4.3
May									
0300	.1	.4	3.0	1.7	7.9	10.0	1.9	.2	5.8
0900	2.3	3.0	6.1	1.7	6.0	3.0	3.2	2.7	3.0
1200	2.7	2.2	4.4	1.6	8.1	3.1	2.9	4.1	1.9
1500	1.6	2.8	3.1	2.0	9.7	3.7	5.0	1.8	1.0
1800	1.7	1.8	3.6	1.1	10.1	3.6	4.2	3.0	1.9
2100	.4	1.6	2.1	1.3	10.7	7.0	3.1	1.0	3.3
Av.	1.5	2.0	3.7	1.6	8.8	5.1	3.4	2.1	2.8
June									
0300	.1	.4	1.8	1.8	7.1	11.8	2.8	.2	4.0
0900	2.9	3.0	3.4	1.1	3.3	3.2	6.4	3.7	2.9
1200	3.1	2.7	2.3	.9	3.2	3.6	7.1	4.3	2.8
1500	2.4	1.4	1.9	1.3	6.2	3.2	6.9	4.4	2.3
1800	1.7	1.0	2.2	1.0	6.9	4.9	5.8	4.2	2.3
2100	.7	1.1	.8	.8	7.8	10.1	4.3	.8	3.6
Av.	1.8	1.6	2.1	1.2	5.8	6.1	5.5	2.9	3.0
July									
0300	.1	.2	1.7	.6	6.6	10.6	4.1	.2	6.9
0900	3.4	2.8	3.8	.3	3.4	2.9	6.0	4.2	4.2
1200	3.7	2.7	2.1	.9	4.2	2.7	5.9	5.1	3.7
1500	3.7	1.7	1.7	.6	6.0	3.0	6.1	5.8	2.4
1800	2.2	2.0	1.7	1.0	5.7	4.0	6.0	6.0	2.4
2100	.1	1.0	1.7	1.2	7.6	9.0	5.2	.8	4.4
Av.	2.2	1.7	2.1	.7	5.6	5.4	5.6	3.7	4.0
August									
0300	.2	.9	3.4	2.7	5.8	7.4	3.1	.3	7.2
0900	1.7	2.9	8.4	.8	3.3	2.2	4.6	3.3	3.8
1200	2.6	2.8	6.6	1.6	4.8	3.2	3.6	3.1	2.7
1500	2.8	2.9	4.4	1.4	6.1	2.1	4.6	4.1	2.6
1800	1.7	1.3	2.6	1.2	7.1	3.7	4.9	3.1	4.6
2100	.2	.2	1.9	1.3	11.3	7.9	3.7	.3	4.2
Av.	1.5	1.9	4.6	1.5	6.4	4.4	4.1	2.4	4.2

FAIRBANKS

Time of day	Wind direction (from) N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	8.3	3.6	1.7	0.6	0.7	2.0	1.2	2.8	9.1
0900	1.9	4.6	4.7	2.9	2.8	2.0	1.4	1.9	8.0
1200	1.6	2.7	4.0	5.5	5.3	3.0	2.1	1.1	4.6
1500	2.3	2.3	2.7	5.1	5.4	3.6	3.4	1.8	3.4
1800	5.3	3.4	1.7	1.4	.9	4.0	2.7	3.6	4.0
2100	11.2	3.1	1.0	.7	1.0	3.0	2.0	3.6	4.4
Av.	5.1	3.3	2.6	2.7	3.2	2.9	2.1	2.5	5.6
May									
0300	9.7	4.2	1.9	.4	1.6	1.8	1.0	4.4	6.0
0900	2.1	3.3	6.4	2.8	3.5	5.3	2.1	1.8	3.6
1200	2.0	2.8	4.1	4.8	5.2	4.6	3.0	3.3	1.2
1500	2.6	4.4	3.9	2.7	4.1	5.5	3.8	2.8	1.2
1800	3.7	4.9	3.4	1.7	2.4	5.4	4.7	3.4	1.4
2100	8.7	3.3	1.6	1.1	1.2	4.8	2.1	4.8	3.4
Av.	4.8	3.8	3.6	2.2	3.0	4.6	2.8	3.4	2.8
June									
0300	6.9	2.7	2.2	.8	1.9	3.4	1.9	2.3	7.9
0900	1.3	3.0	3.0	2.4	3.9	6.9	2.3	2.4	4.8
1200	1.4	1.7	3.0	2.4	2.9	8.2	5.2	2.9	2.3
1500	1.7	2.8	1.9	1.6	3.3	7.7	6.3	2.7	2.0
1800	3.0	2.8	1.7	1.7	2.8	7.7	5.3	2.9	2.1
2100	4.9	2.0	1.2	.9	3.0	6.0	4.9	3.3	3.8
Av.	3.2	2.5	2.2	1.6	3.0	6.6	4.3	2.8	3.8
July									
0300	5.2	5.0	1.9	.8	1.6	3.9	1.4	2.3	8.9
0900	1.2	3.2	2.7	3.7	4.5	6.7	2.8	.9	5.3
1200	1.4	1.6	2.4	2.8	4.9	9.1	4.6	1.9	2.3
1500 1/	1.3	2.1	1.4	2.2	3.6	6.0	8.6	2.4	2.0
1800	2.1	1.4	1.1	2.3	2.7	8.9	7.3	2.4	2.8
2100	4.9	1.3	1.4	.9	3.0	6.1	3.7	4.3	5.4
Av.	2.7	2.4	1.8	2.1	3.4	6.5	4.7	2.4	4.4
August									
0300	5.2	4.6	1.7	1.0	2.1	3.2	1.7	4.1	7.4
0900 1/	2.2	4.4	5.2	2.8	2.2	3.8	2.2	1.5	6.1
1200	.9	2.4	3.7	4.0	4.1	6.2	3.2	2.1	4.4
1500	2.7	2.4	2.4	3.0	3.0	7.2	5.1	2.1	3.1
1800	4.2	2.6	1.9	1.1	1.8	8.2	4.3	3.2	3.7
2100	8.0	1.6	.9	.7	1.8	5.2	2.9	6.0	3.9
Av.	3.9	3.0	2.6	2.1	2.5	5.6	3.2	3.1	4.8

FT. YUKON

Time of day	Wind direction (from) N	NE	E	SE	S	SW	W	NW	Calm
April									
0200	2.6	15.6	1.8	1.0	0.6	3.2	1.4	1.0	1.6
0900	2.7	14.5	2.6	.8	.9	3.9	3.9	.4	.3
1200	2.4	15.3	2.2	.3	.8	4.3	3.9	.8	.0
1500	1.9	13.9	2.4	.8	.6	5.7	3.9	.7	.1
1700 2/	1.5	13.0	3.5	1.0	.6	4.8	3.8	.9	.0
2000 2/	2.7	15.0	2.3	.6	1.1	3.2	2.2	1.6	.4
Av.	2.3	14.6	2.5	.8	.8	4.2	3.2	.9	.4
May									
0200	.9	18.9	1.8	.6	1.1	4.4	1.7	.3	1.3
0900	1.6	15.4	2.3	.6	.8	5.3	4.2	.7	.1
1200	1.3	14.1	2.1	1.1	.7	6.6	4.0	1.0	.1
1500	1.1	14.0	2.0	1.7	1.1	5.7	4.4	1.0	.0
1700 3/	1.1	14.8	1.6	1.8	1.0	4.6	4.6	.9	.0
2000	1.6	15.8	2.0	.9	.9	4.2	4.0	1.2	.4
Av.	1.3	15.5	2.0	1.1	.9	5.1	3.8	.8	.3
June									
0200	1.2	10.9	1.7	1.7	2.0	6.7	3.2	1.2	1.4
0900	1.7	9.1	1.7	1.2	1.7	7.9	5.7	.9	.1
1200	1.0	7.3	1.8	1.2	2.0	7.9	6.9	1.9	.0
1500	1.2	8.3	1.0	1.0	1.6	7.0	8.3	1.6	.0
1700	1.0	8.7	1.6	1.4	1.6	6.4	7.3	1.9	.1
2000	1.6	9.1	1.2	1.7	1.6	6.8	6.1	1.7	.2
Av.	1.3	8.9	1.5	1.4	1.8	7.1	6.2	1.5	.3
July									
0200	1.2	6.8	1.7	1.3	1.9	8.0	6.7	1.6	1.8
0900 1/	1.4	7.2	1.2	.6	2.4	10.0	6.2	1.0	.0
1200	.8	5.0	1.3	1.3	2.8	9.7	8.4	1.7	.0
1500	.8	5.1	1.1	1.2	2.1	8.7	9.7	2.2	.1
1700	.3	3.7	1.0	1.1	2.4	8.5	10.7	3.0	.3
2000	1.6	4.2	1.8	1.3	2.8	7.9	8.7	2.0	.7
Av.	1.0	5.3	1.4	1.1	2.4	7.6	8.4	1.9	.5
August									
0200	.7	7.0	3.6	.8	2.0	8.6	4.2	1.1	3.0
0900	1.2	7.1	2.0	1.0	3.0	8.9	5.5	2.1	.2
1200	1.3	6.1	1.8	1.8	2.9	8.5	6.8	1.8	.0
1500	.7	5.6	2.1	1.9	1.9	7.4	9.0	2.1	.3
1700	1.0	5.6	2.4	1.1	2.6	6.6	8.3	3.0	.4
2000	1.1	7.1	2.7	1.1	2.6	8.7	4.7	2.3	.7
Av.	1.0	6.4	2.4	1.3	2.5	8.1	6.4	2.1	.8

See footnotes at end of table.

Table 27.--Wind direction by hour of day, and number of days per month in each direction class--Continued

(Av. 1950-58)

GALENA

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	9.7	0.8	3.1	2.3	1.2	0.9	0.8	2.2	9.0
0900	9.4	1.4	4.4	1.7	1.0	2.2	1.2	1.8	6.9
1200[4]	11.3	1.4	4.4	1.3	2.3	2.4	.6	1.9	3.3
1500[5]	12.3	1.9	4.0	1.2	2.4	2.4	1.0	.8	1.8
1800[4]	12.9	2.8	4.4	.9	2.3	1.6	.8	1.3	1.9
2100	13.3	1.9	3.6	1.2	1.6	1.1	.8	1.8	4.7
Av.	11.5	1.7	4.0	1.4	1.8	1.8	.9	1.6	4.6
May									
0300	7.1	1.4	3.6	3.3	1.1	1.8	1.4	3.4	7.9
0900	7.0	1.4	4.4	2.0	3.2	3.9	2.1	3.2	3.8
1200	7.4	1.7	4.3	2.8	4.1	3.7	2.6	2.2	2.2
1500	7.3	2.8	5.6	1.8	3.7	3.4	2.1	2.0	2.3
1800	8.3	2.0	5.1	2.6	2.7	2.9	2.2	2.3	2.8
2100	9.0	4.4	3.0	1.4	3.4	2.9	1.0	1.8	4.1
Av.	7.7	2.3	4.3	2.3	3.0	3.1	1.9	2.5	3.9
June									
0300	3.8	.8	2.1	2.9	2.9	5.3	2.0	2.0	8.2
0900	4.2	1.1	2.2	1.8	2.6	6.0	3.4	3.0	5.6
1200	3.6	1.1	2.1	1.7	3.2	7.6	2.6	3.8	4.3
1500	3.2	1.3	2.6	1.9	2.7	7.8	3.2	4.1	3.2
1800	3.8	1.0	1.4	2.1	3.3	6.3	3.1	5.2	3.8
2100	4.6	2.3	1.2	.9	3.7	5.3	2.9	3.4	5.7
Av.	3.9	1.3	1.9	1.9	3.0	6.4	2.9	3.6	5.1
July									
0300	2.1	.6	2.3	2.4	4.2	5.3	4.2	1.0	8.9
0900	2.1	.2	2.4	1.6	4.0	5.8	2.3	2.2	10.4
1200	1.9	.4	2.2	2.1	5.6	5.2	3.9	3.8	5.9
1500	2.2	.8	1.5	1.2	4.1	7.5	4.0	3.8	5.9
1800	3.0	.8	1.6	1.6	4.5	7.0	3.9	3.2	5.4
2100	3.3	1.0	1.5	1.5	4.6	7.8	2.1	2.0	7.2
Av.	2.4	.6	1.9	1.7	4.5	6.5	3.4	2.7	7.3
August									
0300	3.0	.6	4.1	5.3	3.2	4.5	1.8	.9	7.6
0900	1.9	1.0	4.3	4.5	3.3	4.8	1.8	1.6	7.8
1200	2.8	1.0	3.2	4.5	5.9	4.6	1.8	3.0	4.2
1500	2.8	.8	4.2	3.6	5.2	5.9	2.9	2.5	3.1
1800	2.6	1.0	3.1	2.8	4.9	6.9	1.8	2.8	5.1
2100	3.0	.9	4.3	3.5	4.6	5.0	1.2	2.0	6.5
Av.	2.7	.9	3.9	4.0	4.5	5.3	1.9	2.1	5.7

GULKANA

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	2.9	0.7	0.3	5.6	1.9	1.9	5.6	4.7	6.4
0900	2.8	.6	1.6	9.6	2.6	1.6	2.8	2.6	5.8
1200	2.4	1.3	1.7	11.2	2.4	1.6	[illegible]	2.2	3.8
1500	3.2	2.4	1.2	9.3	3.9	2.8	2.7	1.6	2.9
1800	3.0	.7	.7	9.3	3.6	1.6	5.2	3.6	2.3
2100[1]	2.8	1.3	1.7	8.6	2.3	1.3	4.2	3.3	3.2
Av.	2.8	1.2	1.2	8.9	2.8	1.8	4.0	3.0	4.1
May									
0300	1.9	1.0	1.4	9.8	4.4	2.3	2.2	1.6	6.4
0900	1.7	2.2	2.4	13.8	3.3	2.9	1.7	1.1	1.9
1200	2.2	1.4	2.6	13.0	4.8	2.9	2.2	1.3	.6
1500	2.7	.9	1.8	13.0	4.7	3.9	1.9	1.3	.8
1800	2.1	2.1	.9	9.6	5.8	4.8	2.2	2.3	1.2
2100	2.3	1.3	1.4	12.4	4.3	2.4	3.1	1.9	1.9
Av.	2.2	1.5	1.8	11.9	4.6	3.2	2.2	1.5	2.1
June									
0300	1.1	.6	1.6	9.1	5.6	3.0	1.8	2.1	5.1
0900	1.7	1.1	3.1	11.8	3.9	3.1	1.7	2.2	1.4
1200	2.3	1.1	3.3	10.0	5.8	4.0	1.8	1.1	.6
1500	1.8	1.2	3.1	10.0	5.2	3.9	2.2	2.2	.4
1800	2.8	.9	1.8	10.1	4.0	4.9	2.6	2.2	.7
2100	2.0	.6	1.3	10.1	4.8	3.4	2.4	3.8	1.6
Av.	2.0	.9	2.4	10.2	4.9	3.7	2.0	2.3	1.6
July									
0300	.9	.6	1.2	8.0	7.3	4.0	1.8	2.3	4.9
0900	2.3	.8	4.1	12.0	4.2	2.4	1.4	1.2	2.6
1200	2.0	1.8	3.6	12.8	3.0	2.1	1.7	3.0	1.0
1500	2.8	.9	4.2	12.0	3.4	3.3	2.1	1.1	1.2
1800	3.1	1.3	2.3	11.8	4.4	2.0	1.2	2.9	2.0
2100	2.2	.8	1.9	11.4	4.2	3.0	2.0	3.2	2.3
Av.	2.2	1.0	2.9	11.4	4.4	2.8	1.7	2.3	2.3
August									
0300	1.6	.9	.7	7.4	5.7	4.3	1.6	2.6	6.2
0900	2.8	1.4	2.2	12.1	3.9	3.2	1.4	1.0	3.0
1200	3.2	1.0	3.0	11.4	5.0	2.0	1.4	1.8	2.2
1500	3.2	1.3	3.3	12.2	3.9	3.2	1.7	1.2	1.0
1800	3.0	1.4	1.3	11.9	5.1	2.3	2.2	1.4	2.4
2100	2.2	.7	2.0	11.4	4.2	1.9	2.8	2.1	3.7
Av.	2.7	1.1	2.1	11.1	4.6	2.8	1.8	1.7	3.1

HOMER

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	6.3	7.0	2.1	0.6	0.9	2.0	0.6	1.7	8.8
0900	1.3	7.5	4.8	3.9	2.8	4.2	.0	.6	4.9
1200	1.6	4.2	3.2	2.2	5.3	10.4	.6	.2	2.3
1500	1.8	3.4	2.4	2.2	3.8	12.3	1.4	.9	1.8
1800	1.8	3.4	2.4	2.3	2.2	8.9	2.7	2.2	4.1
2100	3.5	4.9	2.3	.9	.9	4.1	2.3	2.3	8.8
Av.	2.7	5.1	2.9	2.0	2.6	7.0	1.3	1.3	5.1
May									
0300	4.7	8.2	1.8	.9	1.2	1.2	1.3	1.9	9.8
0900	.8	2.7	4.8	4.6	6.5	8.8	1.0	.1	1.7
1200	.4	2.3	3.9	3.4	5.1	12.9	2.2	.1	.7
1500	.9	1.9	3.7	3.1	3.7	14.5	2.0	.6	.6
1800	.9	2.4	3.1	3.7	2.6	14.0	2.3	.7	1.3
2100	1.8	4.0	1.9	3.2	1.4	6.4	3.9	1.3	7.1
Av.	1.6	3.6	3.2	3.2	3.4	9.6	2.1	.8	3.5
June									
0300	3.4	6.3	1.2	1.1	1.1	1.7	1.9	1.6	11.7
0900	.4	.8	2.4	2.8	5.1	13.4	2.3	.6	2.2
1200	.6	1.0	2.2	1.1	4.9	17.6	1.9	.3	.4
1500	.1	.9	1.7	2.0	2.9	17.6	3.7	.3	.8
1800	.4	1.1	1.3	2.0	4.5	16.2	2.9	.3	1.3
2100	1.7	2.1	1.7	1.2	1.7	8.5	5.2	1.3	6.6
Av.	1.1	2.0	1.8	1.7	3.4	12.5	3.0	.7	3.8
July									
0300	4.1	6.6	1.1	.2	.9	2.0	1.7	.3	14.1
0900	.4	3.2	1.7	1.9	5.6	9.4	1.9	.9	6.0
1200	1.0	2.9	.9	.7	2.4	17.6	2.0	.2	3.3
1500	.2	3.0	.9	1.6	3.1	15.1	2.9	.6	3.6
1800	.2	.8	1.3	1.9	1.9	18.2	4.0	.3	2.4
2100	2.0	2.4	.8	.9	1.6	5.4	3.9	3.0	11.0
Av.	1.3	3.2	1.1	1.2	2.6	11.3	2.7	.9	6.7
August									
0300	4.4	7.7	1.4	1.9	.4	2.0	.6	.9	11.7
0900	1.1	3.9	5.2	3.0	3.6	5.9	1.7	.2	6.4
1200	.7	1.9	1.4	2.2	5.4	14.8	2.0	.2	2.4
1500	.6	1.8	1.4	1.9	3.6	15.5	2.8	.3	3.1
1800	.8	1.4	1.8	1.9	2.9	13.0	3.3	1.3	4.6
2100	3.7	5.0	1.2	2.0	1.1	4.7	1.7	1.1	10.5
Av.	1.9	3.6	2.1	2.2	2.8	9.3	2.0	.7	6.4

ILIAMNA

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	8.2	3.0	6.4	1.0	0.0	0.9	3.9	2.6	4.0
0900	4.9	1.7	8.0	3.7	1.2	1.6	3.0	2.2	3.7
1200	1.9	1.1	8.0	4.4	3.0	3.6	3.2	2.4	2.4
1500	.9	.8	7.6	4.9	3.0	3.9	4.2	2.9	1.8
1800	1.7	1.3	6.3	4.0	2.3	3.6	5.4	2.4	3.0
2100	2.8	2.3	6.1	2.8	.7	1.5	4.3	4.6	4.9
Av.	3.4	1.7	7.1	3.5	1.7	2.5	4.0	2.8	3.3
May									
0300	4.8	2.3	10.0	1.4	.3	1.2	3.8	2.4	4.8
0900	1.8	.6	11.7	9.5	1.6	2.3	1.7	.6	1.2
1200	.7	.4	11.0	9.3	4.3	2.3	1.7	.7	[illegible]
1500	.8	.2	10.7	9.7	4.0	2.0	2.0	.9	.7
1800	.2	.3	10.4	9.3	4.1	2.6	1.7	1.3	1.1
2100	.8	1.2	11.3	3.7	1.1	2.1	4.4	1.3	5.1
Av.	1.5	.8	10.8	7.2	2.6	2.1	2.6	1.2	2.2
June									
0300	3.0	1.8	7.0	1.8	.3	2.9	5.7	2.8	4.7
0900	.7	.8	7.0	8.2	2.4	5.3	2.9	1.0	1.7
1200	.7	.1	6.7	9.1	3.8	6.1	1.7	1.4	.4
1500	.4	.1	7.9	8.3	4.2	5.8	1.3	1.6	.4
1800	.6	.0	7.6	8.0	3.9	5.4	2.4	1.7	.4
2100	1.0	1.0	8.0	4.9	2.0	3.3	5.5	1.6	2.7
Av.	1.1	.6	7.4	6.7	2.8	4.8	3.2	1.7	1.7
July									
0300	2.6	1.6	6.2	2.0	.1	3.2	6.7	1.9	6.7
0900	1.3	.3	7.0	6.9	3.0	6.9	2.9	.6	[illegible]
1200	.9	.4	5.6	8.8	4.0	6.8	[illegible]	[illegible]	[illegible]
1500	.8	.0	5.1	9.4	4.9	7.1	1.7	1.3	.7
1800	.3	.4	5.8	7.3	4.2	6.1	3.2	2.0	1.7
2100	.9	.9	6.0	4.2	1.8	3.2	6.8	2.1	[illegible]
Av.	1.1	.6	6.0	6.4	3.0	5.6	3.9	1.5	2.9
August									
0300	4.6	1.8	5.1	2.2	.7	2.6	5.5	3.2	5.3
0900	2.2	1.9	6.8	4.8	1.2	4.4	5.0	[illegible]	5.1
1200	1.2	.6	7.1	6.4	3.3	5.6	3.3	1.5	1.7
1500	.6	.4	5.6	9.4	[illegible]	[illegible]	[illegible]	1.4	[illegible]
1800	.9	.4	8.1	6.4	2.2	6.4	3.1	1.9	1.6
2100	1.2	1.2	6.8	4.4	1.7	[illegible]	5.4	[illegible]	4.4
Av.	1.8	1.0	6.6	5.4	2.0	4.8	4.3	2.1	3.0

KOTZEBUE

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	3.8	5.5	7.3	3.0	1.7	2.4	[illegible]	[illegible]	[illegible]
0900	2.7	4.4	6.8	3.8	1.0	2.9	4.6	1.2	[illegible]
1200	1.8	3.1	7.5	3.6	1.6	3.8	5.7	1.6	[illegible]
1500	2.4	2.8	7.4	3.1	1.3	4.0	6.6	1.6	.8
1800	[illegible]	[illegible]	6.7	2.3	[illegible]	4.6	6.4	1.2	.9
2100	3.2	4.2	7.5	2.1	[illegible]	[illegible]	4.9	1.3	[illegible]
Av.	2.8	3.9	7.2	3.0	1.8	3.6	5.3	1.2	1.2
May									
0300	3.2	7.0	6.1	1.7	1.2	4.0	4.8	1.7	1.3
0900	3.0	2.9	6.7	1.9	2.3	5.8	4.7	2.3	.4
1200	2.2	[illegible]	5.4	2.2	2.2	7.1	8.5	1.2	.2
1500	2.2	2.3	4.6	1.7	[illegible]	6.8	9.7	2.1	.6
1800	2.6	3.4	4.1	1.3	1.3	5.3	9.2	2.7	1.1
2100	3.6	5.1	4.8	1.4	1.6	3.8	7.2	1.6	1.9
Av.	2.8	3.8	5.3	1.7	1.6	5.6	7.4	1.9	.9
June									
0300	2.4	3.0	2.7	2.4	3.7	6.0	8.8	1.4	.6
0900	1.2	.4	1.4	3.1	4.2	9.4	8.8	1.4	.1
1200	.8	.3	1.9	2.4	3.7	9.1	11.6	1.4	.1
1500	.6	.2	1.1	[illegible]	1.8	8.9	14.7	2.2	.2
1800	.3	.9	.9	1.9	[illegible]	5.7	14.3	2.4	[illegible]
2100	.7	.2	2.1	2.0	2.7	4.7	[illegible]	2.1	[illegible]
Av.	[illegible]	1.1	1.7	2.4	2.7	6.9	11.8	1.8	.3
July									
0300	1.7	2.1	3.7	4.3	3.4	4.7	8.1	2.2	.8
0900	.7	.1	.4	4.9	4.7	7.8	[illegible]	2.0	.3
1200	.1	.4	.5	[illegible]	5.1	7.0	11.7	.9	.0
1500	1.0	.2	1.2	4.6	3.7	4.8	13.1	1.7	.7
1800	1.3	.8	2.0	3.7	2.6	4.3	14.0	1.6	.7
2100	1.1	[illegible]	2.6	3.3	[illegible]	5.4	[illegible]	2.1	.9
Av.	1.0	.9	2.1	4.3	[illegible]	5.7	[illegible]	1.8	.6
August									
0300	3.1	2.9	6.3	4.6	[illegible]	[illegible]	6.3	1.7	.6
0900	1.9	1.1	6.9	4.6	4.4	2.9	6.8	2.1	.3
1200	.6	.9	4.9	5.1	[illegible]	5.5	7.5	1.7	[illegible]
1500	.2	.9	3.8	5.6	3.9	4.4	10.0	2.0	.2
1800	.9	2.4	4.2	4.7	3.7	3.1	9.0	2.3	.7
2100	1.8	3.4	4.8	4.2	[illegible]	3.0	7.0	2.0	.9
Av.	1.4	1.9	5.2	4.8	3.7	3.7	[illegible]	2.1	.4

LAKE MINCHUMINA

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
April									
0300	2.8	7.7	[illegible]	[illegible]	0.6	[illegible]	2.0	2.0	9.4
0900	.8	4.1	7.1	2.0	2.1	4.7	1.4	1.1	6.7
1200	1.0	4.9	9.3	2.7	2.4	4.2	1.2	.3	[illegible]
1500	1.7	4.9	9.0	3.2	2.1	3.0	1.1	1.1	3.9
1800	3.1	10.0	4.1	[illegible]	.8	[illegible]	2.2	2.4	4.8
2100	[illegible]	10.4	1.4	.0	.3	[illegible]	2.3	2.8	5.0
Av.	2.6	7.0	5.4	1.4	1.4	[illegible]	1.8	1.6	5.6
May									
0300	3.4	6.2	2.2	.4	.8	2.6	2.9	[illegible]	9.1
0900	.5	4.4	10.4	3.7	2.2	5.4	.8	1.1	2.2
1200	1.4	4.8	9.1	4.1	[illegible]	4.8	1.8	.7	1.4
1500	1.4	4.7	7.8	[illegible]	2.8	5.6	3.0	1.7	1.4
1800	3.4	8.2	3.6	[illegible]	.6	5.9	3.6	2.0	3.1
2100	6.2	6.4	1.0	.2	.6	3.6	4.9	4.2	3.9
Av.	2.8	5.8	5.7	1.9	1.7	4.6	2.8	2.2	3.5
June									
0300	2.8	2.4	1.0	.1	.6	[illegible]	4.7	2.0	10.1
0900	.7	4.1	6.7	3.0	2.4	6.6	3.2	.9	1.4
1200	.8	3.0	6.4	3.1	[illegible]	7.8	2.8	1.6	1.2
1500	[illegible]	4.4	4.5	1.3	2.7	9.4	2.7	[illegible]	.5
1800	.7	4.4	1.4	1.1	1.6	[illegible]	[illegible]	3.7	1.9
2100	4.0	[illegible]	.4	.6	.4	6.3	6.7	[illegible]	3.2
Av.	[illegible]	[illegible]	3.4	1.5	2.0	7.4	4.2	2.7	[illegible]
July									
0300	1.6	1.6	.6	[illegible]	.6	[illegible]	[illegible]	[illegible]	10.7
0900	[illegible]	[illegible]	4.2	2.1	1.6	[illegible]	2.9	.9	4.0
1200	.6	1.7	5.3	4.4	2.3	9.7	3.1	1.7	2.1
1500	.8	3.2	4.4	3.0	3.2	9.1	4.1	[illegible]	1.3
1800	1.9	3.3	2.1	.7	1.8	9.9	4.8	2.3	4.2
2100	3.3	2.6	.6	[illegible]	.8	[illegible]	7.1	1.6	5.2
Av.	1.4	[illegible]	2.9	2.0	2.1	8.6	4.6	2.4	4.6
August									
0300	2.8	[illegible]	.7	.6	[illegible]	[illegible]	4.3	3.1	11.3
0900	[illegible]	[illegible]	5.9	2.1	2.8	[illegible]	2.8	1.3	5.2
1200	[illegible]	[illegible]	[illegible]	2.4	[illegible]	[illegible]	[illegible]	.8	2.7
1500	.4	3.9	6.0	1.6	1.6	[illegible]	4.1	[illegible]	[illegible]
1800	1.1	[illegible]	3.8	.5	1.2	[illegible]	4.6	2.1	6.0
2100	3.7	3.3	[illegible]	.2	1.7	5.2	[illegible]	3.9	5.9
Av.	1.5	3.5	3.6	1.3	1.8	6.8	4.2	2.2	[illegible]

See footnotes at end of table.

Table 27.--Wind direction by hour of day, and number of days per month in each direction class--Continued

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Time of day	N	NE	E	SE	S	SW	W	NW	Calm
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Weather Bureau coded data

Table 28.--Wind velocity by hour of day, and number of days per month in each velocity class

(Av. 1950-58)

ANCHORAGE

Time of day	0-3	4-7	8-12	13-18	19-24	25/
			April			
0300	14.8	9.8	4.2	1.1	.1	
0900	8.3	13.9	5.8	2.0		.1
1200	4.8	12.4	10.7	1.8	.2	.1
1500	3.7	11.7	10.1	4.1	.2	.3
1800	[illegible]	11.4	6.2	3.4	[illegible]	
2100	12.4	9.3	[illegible]	2.1	[illegible]	.1
Av.	8.7	11.4	7.2	2.4	.2	.1
			May			
0300	14.6	9.7	4.3	[illegible]	[illegible]	.1
0900	[illegible]	14.4	[illegible]	3.1	.6	
1200	2.7	5.7	12.7	[illegible]	[illegible]	.1
1500	1.2	[illegible]	[illegible]	7.7	[illegible]	[illegible]
1800	[illegible]	[illegible]	10.3	8.1	[illegible]	
2100	10.9	8.9	5.7	5.2	.3	
Av.	6.2	9.4	9.2	5.3	[illegible]	[illegible]
			June			
0300	15.8	9.9	2.9	[illegible]	.4	
0900	6.2	14.1	8.0	1.6	.1	
1200	3.2	10.9	11.7	3.6	.6	
1500	1.8	9.8	12.4	4.6	1.4	
1800	4.1	9.2	10.1	[illegible]	[illegible]	
2100	12.9	8.3	4.3	3.9	.6	[illegible]
Av.	7.3	10.4	8.2	3.5	[illegible]	
			July			
0300	17.9	8.4	3.3	1.4		
0900	7.3	14.6	7.7	1.3	.1	
1200	5.2	12.1	11.1	2.2	.4	
1500	3.6	12.0	11.0	3.7	.7	
1800	6.4	12.0	8.3	3.7	.6	
2100	14.1	9.3	4.2	3.1	.3	
Av.	9.1	11.4	7.6	2.6	.3	
			August			
0300	13.6	7.9	2.6	1.8	.2	.1
0900	10.6	12.9	5.6	1.7		
1200	6.0	14.4	[illegible]	1.4	.3	.1
1500	5.6	13.5	8.9	2.7	.3	
1800	10.9	10.6	7.1	2.0	.3	.1
2100	14.7	9.9	4.0	2.1	.2	.1
Av.	11.1	11.5	6.2	1.9	.2	[illegible]

BETHEL

Time of day	0-3	4-7	8-12	13-18	19-24	25/
			April			
0300	4.1	9.7	.7	[illegible]	[illegible]	[illegible]
0900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.4
1200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1500	.9	[illegible]	11.0	[illegible]	[illegible]	.7
1800	[illegible]	[illegible]	[illegible]	[illegible]	1.7	
2100	3.7	[illegible]	11.4	[illegible]	1.7	.4
Av.	[illegible]	7.1	[illegible]	[illegible]	[illegible]	[illegible]
			May			
0300	3.7	11.0	11.9	3.9	.4	.1
0900	[illegible]	7.7	12.0	7.8	1.6	.1
1200	.9	[illegible]	11.4	10.4	2.1	.4
1500	.9	[illegible]	13.2	[illegible]	[illegible]	.2
1800	[illegible]	6.3	[illegible]	9.9	1.7	.2
2100	2.7	9.8	11.7	[illegible]	.9	.1
Av.	[illegible]	7.2	[illegible]	[illegible]	[illegible]	.2
			June			
0300	2.9	11.1	12.8	3.3	.1	
0900	1.7	6.4	14.5	[illegible]	.7	.1
1200	1.0	[illegible]	14.2	7.3	1.2	.3
1500	.9	[illegible]	13.4	[illegible]	[illegible]	
1800	.6	4.4	[illegible]	9.7	1.0	
2100	1.7	9.4	[illegible]	[illegible]	.3	.1
Av.	[illegible]	7.2	13.6	[illegible]	.7	.1
			July			
0300	4.9	[illegible]	9.4	[illegible]	[illegible]	
0900	1.8	10.2	11.8	6.2	.9	.1
1200	1.6	8.2	[illegible]	[illegible]	[illegible]	.2
1500	1.1	7.4	[illegible]	[illegible]	[illegible]	.1
1800	1.4	6.9	13.6	[illegible]	[illegible]	
2100	2.4	10.9	13.1	[illegible]	.4	.1
Av.	2.2	[illegible]	[illegible]	[illegible]	.9	.1
			August			
0300	3.8	10.7	10.7	5.1	[illegible]	.1
0900	2.4	7.3	12.7	6.7	1.9	
1200	.9	7.3	12.1	7.7	[illegible]	.4
1500	1.3	7.1	11.9	7.7	.9	.1
1800	1.2	[illegible]	12.4	7.9	[illegible]	.1
2100	4.2	10.0	10.2	5.7	.9	
Av.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.1

BETTLES

Time of day	0-3	4-7	8-12	13-18	19-24	25/
			April			
0300	[illegible]	11.5	[illegible]	[illegible]	1.2	[illegible]
0900	[illegible]	[illegible]	[illegible]	3.7		[illegible]
1200	7.[illegible]	[illegible]	[illegible]	[illegible]	.2	
1500	7.7	[illegible]	[illegible]	3.7	.3	
1800	[illegible]	[illegible]	[illegible]	[illegible]	.4	
2100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Av.	[illegible]	[illegible]	[illegible]	2.9	.2	[illegible]
			May			
0300	8.1	11.6	[illegible]	[illegible]	.2	
0900	[illegible]	[illegible]	[illegible]	[illegible]	.2	[illegible]
1200	[illegible]	[illegible]	[illegible]	[illegible]	.1	
1500	[illegible]	[illegible]	[illegible]	[illegible]	.3	.1
1800	4.7	[illegible]	[illegible]	[illegible]		
2100	7.9	13.4	[illegible]	[illegible]		
Av.	[illegible]	[illegible]	[illegible]	2.4	[illegible]	
			June			
0300	12.0	10.7	6.0	[illegible]		
0900	[illegible]	[illegible]	[illegible]	[illegible]	.4	
1200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
1500	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1800	[illegible]	[illegible]	10.5	[illegible]	[illegible]	[illegible]
2100	9.0	10.8	8.2	[illegible]	.2	
Av.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			July			
0300	9.1	[illegible]	[illegible]	[illegible]		
0900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
1200	[illegible]	[illegible]	[illegible]	3.4	.3	[illegible]
1500	[illegible]	[illegible]	[illegible]	4.4	[illegible]	
1800	5.9	10.8	[illegible]	[illegible]	[illegible]	
2100	9.7	14.0	6.3	[illegible]	[illegible]	
Av.	[illegible]	[illegible]	[illegible]	2.8	.3	
			August			
0300	[illegible]	[illegible]	9.3	[illegible]		
0900	[illegible]	[illegible]	10.3	[illegible]		
1200	[illegible]	[illegible]	[illegible]	.9	.7	
1500	6.0	[illegible]	[illegible]	[illegible]	.3	
1800	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2100	[illegible]	[illegible]	[illegible]	[illegible]		
Av.	[illegible]	[illegible]	[illegible]	[illegible]	.1	

BIG DELTA

Time of day	0-3	4-7	8-12	13-18	19-24	25/
			April			
0300	9.1	11.4	4.2	2.2	1.1	2.0
0900	7.9	7.7	6.0	3.1	[illegible]	3.2
1200	6.3	6.4	6.7	[illegible]	[illegible]	2.8
1500	6.0	5.7	8.1	5.2	2.8	2.2
1800	4.7	[illegible]	10.5	3.9	[illegible]	[illegible]
2100	6.0	10.6	8.2	2.3	[illegible]	2.1
Av.	6.7	[illegible]	7.3	3.6	1.9	2.2
			May			
0300	9.1	11.8	5.3	[illegible]	[illegible]	1.8
0900	6.1	10.2	6.2	4.0	2.7	1.8
1200	3.8	9.5	7.2	6.3	2.0	2.2
1500	2.4	7.1	9.9	[illegible]	2.9	2.4
1800	3.8	7.8	9.9	4.7	2.4	2.4
2100	5.8	11.6	6.7	3.4	[illegible]	1.9
Av.	5.2	9.7	7.5	4.4	[illegible]	[illegible]
			June			
0300	6.4	14.2	7.4	1.0	.1	.9
0900	4.8	12.6	7.9	3.4	.7	.6
1200	5.1	10.6	8.6	4.2	.4	1.1
1500	3.7	10.3	9.3	4.8	.6	1.3
1800	4.3	10.3	10.4	[illegible]	[illegible]	.4
2100	7.0	12.3	7.2	2.8	[illegible]	.4
Av.	5.2	11.7	8.5	3.3	.5	.5
			July			
0300	10.2	13.1	5.8	.9	.6	.4
0900	7.6	14.3	6.2	1.9	.4	.6
1200	6.2	13.0	8.1	2.0	.9	.8
1500	4.9	11.8	8.9	3.0	1.7	.7
1800	5.9	11.6	8.7	2.9	1.0	.9
2100	6.9	14.0	6.9	1.6	1.0	.6
Av.	7.0	13.0	7.4	2.0	.9	.7
			August			
0300	10.9	12.8	4.8	.8	.9	.8
0900	7.6	10.6	[illegible]	2.4	1.4	[illegible]
1200	5.6	12.0	7.7	2.3	[illegible]	1.6
1500	5.7	9.6	9.3	3.9	1.3	1.2
1800	7.8	13.2	5.4	2.2	1.4	1.0
2100	7.9	11.9	7.0	2.2	1.0	[illegible]
Av.	7.6	11.7	[illegible]	2.3	1.3	[illegible]

FAIRBANKS

Time of day	0-3	4-7	8-12	13-18	19-24	25/
			April			
0300	16.1	7.9	5.3	[illegible]		
0900	14.1	8.2	5.4	[illegible]	[illegible]	
1200	9.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1500	[illegible]	[illegible]	[illegible]	[illegible]	.2	
1800	[illegible]	[illegible]	8.8	[illegible]	.2	
2100	9.0	[illegible]	[illegible]	[illegible]	[illegible]	
Av.	[illegible]	9.9	[illegible]	[illegible]	.2	
			May			
0300	13.9	10.1	6.0	1.0		
0900	[illegible]	[illegible]	7.1	[illegible]	[illegible]	
1200	4.9	[illegible]	9.6	6.2	[illegible]	.1
1500	4.7	[illegible]	[illegible]	[illegible]	[illegible]	.1
1800	3.9	[illegible]	12.4	[illegible]	[illegible]	
2100	8.2	12.0	9.0	[illegible]		
Av.	7.4	[illegible]	[illegible]	[illegible]	.4	
			June			
0300	16.3	8.8	4.2	.7		
0900	10.4	9.3	6.7	3.1	.4	.1
1200	6.4	9.5	8.8	4.7	.4	.2
1500	5.2	[illegible]	10.5	5.1	1.0	[illegible]
1800	4.7	10.3	9.9	4.1	[illegible]	.2
2100	7.7	13.1	7.2	[illegible]	.1	
Av.	[illegible]	[illegible]	7.9	3.2	.4	[illegible]
			July			
0300	17.7	9.9	2.7	.7		
0900	12.6	10.7	6.3	1.3	.1	
1200	6.2	12.3	9.3	3.1	[illegible]	
1500	4.7	11.0	10.5	[illegible]	.2	
1800	7.8	10.9	8.9	2.9	.4	.1
2100	12.9	11.9	5.4	.7	.1	
Av.	10.3	11.1	7.2	2.2	.2	
			August			
0300	17.1	10.6	2.4	.9		
0900	13.3	10.8	5.7	1.2		
1200	9.2	[illegible]	8.3	2.0	[illegible]	
1500	6.9	12.6	[illegible]	2.8	.3	
1800	7.9	[illegible]	6.7	1.2	.1	
2100	[illegible]	[illegible]	6.6	[illegible]	.1	
Av.	[illegible]	[illegible]	6.4	1.4	.1	

FT. YUKON

Time of day	0-3	4-7	8-12	13-18	19-24	25/
			April			
0300 1/	3.6	11.3	10.0	[illegible]	[illegible]	
0900	[illegible]	[illegible]	9.9	[illegible]	[illegible]	
1200	.8	9.4	[illegible]	[illegible]	[illegible]	[illegible]
1500	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1800	Data missing					
2100 1/	2.2	[illegible]	10.3	[illegible]	1.7	.2
Av.	[illegible]	[illegible]	[illegible]	[illegible]	1.4	[illegible]
			May			
0300	1.6	12.4	[illegible]	[illegible]	.8	
0900	.9	8.9	11.7	7.9	1.6	
1200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1500	.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1800	Data missing					
2100	1.3	10.3	11.1	[illegible]	2.2	.2
Av.	[illegible]	9.2	12.2	6.8	1.6	[illegible]
			June			
0300	3.1	13.4	10.7	2.4	.4	
0900	1.4	11.2	9.2	6.7	1.4	[illegible]
1200	.4	8.2	12.4	6.7	2.1	.2
1500	.6	7.2	13.7	[illegible]	1.8	.4
1800	Data missing					
2100	1.3	11.4	[illegible]	[illegible]	[illegible]	.2
Av.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.2
			July			
0300	5.3	14.9	7.4	[illegible]	[illegible]	
0900	2.2	12.6	[illegible]	5.4	1.4	.1
1200	2.2	[illegible]	10.9	[illegible]	[illegible]	.3
1500	[illegible]	[illegible]	12.2	[illegible]	2.1	[illegible]
1800	Data missing					
2100	3.2	12.9	9.1	[illegible]	1.6	
Av.	[illegible]	[illegible]	[illegible]	[illegible]	1.5	[illegible]
			August			
0300	4.6	16.1	[illegible]	1.6	.7	
0900	[illegible]	[illegible]	[illegible]	[illegible]	1.6	.1
1200	[illegible]	10.3	10.9	[illegible]	[illegible]	.4
1500	1.1	9.2	11.7	[illegible]	1.7	[illegible]
1800	Data missing					
2100	3.3	13.3	9.4	4.1	.8	.1
Av.	2.4	12.2	10.0	4.9	1.3	.2

1/ Minor data discrepancy

Table 28.--Wind velocity by hour of day and number of days per month in each velocity class--Continued

(Av. 1950-58)

GALENA

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	11.0	7.7	7.0	3.3	0.6	0.4
0900	9.0	5.6	7.5	5.3	1.8	.5
1200	6.3	5.6	9.5	6.3	2.4	.9
1500	2.9	5.3	9.9	9.5	1.8	.6
1800	3.4	5.1	12.2	7.8	1.2	.3
2100	8.9	5.1	11.4	4.9	.6	.4
Av.	6.4	5.8	9.6	6.2	1.4	.6
			May			
0300	12.0	9.0	7.8	2.2		.1
0900	5.6	7.8	11.1	5.5	.7	
1200	3.6	7.3	10.6	8.0	1.4	.1
1500	4.3	6.2	11.4	7.3	1.6	.2
1800	4.1	6.6	10.5	8.2	1.6	
2100	6.4	8.0	12.3	3.9	.4	
Av.	6.0	7.5	10.6	5.9	.9	.1
			June			
0300	11.2	8.2	8.1	2.2	.2	.1
0900	7.6	7.6	8.8	4.9	.8	.3
1200	5.6	6.5	9.5	5.0	1.7	.4
1500	4.9	6.7	10.9	5.7	1.6	.3
1800	4.9	5.7	11.8	5.9	1.4	.4
2100	7.3	6.6	11.6	3.8	.6	.1
Av.	7.1	6.9	10.1	4.6	1.0	.3
			July			
0300	10.6	9.4	7.8	2.8	.4	
0900	11.3	5.9	6.6	4.9	.9	.4
1200	7.2	9.0	7.6	5.2	1.6	.4
1500	6.8	7.2	9.5	4.8	2.2	.5
1800	6.8	7.6	8.9	6.4	1.2	.1
2100	10.7	9.0	7.9	2.5	.9	
Av.	9.1	8.0	8.1	4.4	1.2	.2
			August			
0300	10.2	8.0	9.2	2.6	.8	.2
0900	7.9	6.0	9.9	5.6	1.2	.4
1200	5.9	5.6	11.4	5.0	2.2	.9
1500	4.4	7.4	10.8	5.0	2.6	.6
1800	6.4	7.1	11.7	4.1	2.1	.6
2100	7.6	6.5	9.2	3.8	1.0	
Av.	7.2	7.1	10.2	4.4	1.7	.4

GULKANA

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	11.4	10.6	4.4	2.3	0.9	0.4
0900	11.1	7.4	4.7	3.7	1.8	1.3
1200	8.9	6.4	4.4	6.7	2.6	2.0
1500	5.9	6.6	7.3	6.0	3.0	1.2
1800	4.1	8.7	10.0	5.0	1.4	.8
2100	7.6	10.3	7.6	2.9	1.2	.4
Av.	8.2	8.3	6.4	4.3	1.8	1.0
			May			
0300	11.4	9.8	5.4	3.6	.8	
0900	7.1	7.0	6.8	5.8	3.1	1.2
1200	2.4	8.7	7.7	6.2	4.4	1.6
1500	2.1	6.6	8.7	7.3	4.7	1.6
1800	2.4	8.2	10.0	6.1	3.1	1.2
2100	5.2	11.4	9.1	4.0	1.2	.1
Av.	5.1	8.6	8.0	5.5	2.9	.9
			June			
0300	9.7	11.1	5.9	3.0	.3	
0900	4.7	10.2	8.2	4.3	2.0	.6
1200	3.0	8.2	8.7	6.2	2.7	1.2
1500	3.0	7.6	7.3	8.1	2.9	1.1
1800	2.1	7.3	9.7	7.3	3.3	.3
2100	5.2	10.2	9.2	3.6	1.7	.1
Av.	4.6	9.1	8.2	5.4	2.1	.6
			July			
0300	12.4	11.1	5.8	1.3	.4	
0900	6.6	10.2	8.7	3.6	1.6	.3
1200	4.9	8.8	8.8	4.9	3.3	.9
1500	3.7	9.2	8.9	4.9	3.4	.9
1800	4.3	9.2	7.7	6.7	2.7	.4
2100	5.6	11.3	9.1	4.0	1.0	
Av.	6.2	9.9	8.2	4.2	2.1	.4
			August			
0300	11.5	10.3	5.4	3.0	.6	.2
0900	6.4	10.3	7.7	4.2	1.7	.7
1200	5.0	9.5	8.9	5.4	2.8	1.6
1500	3.9	8.8	7.7	6.6	2.8	1.2
1800	5.1	10.9	8.2	4.2	2.2	.4
2100	7.0	11.6	6.5	4.4	1.3	.2
Av.	6.5	10.2	7.1	4.7	1.8	.7

HOMER

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	16.7	7.4	3.4	1.8	0.4	0.1
0900	11.6	9.2	6.1	2.2	.6	.3
1200	6.1	8.9	10.6	5.7	.4	.3
1500	5.0	5.8	10.4	6.7	1.0	.1
1800	8.5	8.2	8.6	3.5	.7	.1
2100	16.0	6.9	2.5	3.9	.4	
Av.	10.6	7.6	7.0	4.0	.6	.2
			May			
0300	18.5	8.7	2.7	.7	.3	.1
0900	6.2	11.4	8.7	4.2	.2	.1
1200	3.1	8.2	12.9	5.4	.4	
1500	2.2	5.7	12.1	10.1	.5	.1
1800	4.0	10.1	12.1	4.4	.3	.1
2100	14.6	7.7	6.4	2.0	.2	.1
Av.	8.1	8.3	9.1	5.0	.4	.1
			June			
0300	20.6	6.2	2.0	1.1	.1	
0900	5.7	11.0	9.6	3.3	.4	
1200	2.9	6.6	12.3	7.4	.8	
1500	2.9	5.4	12.9	8.1	.7	
1800	5.1	8.4	13.4	2.5	.3	
2100	13.7	11.3	4.4	.4	.2	
Av.	8.4	8.3	9.1	3.8	.4	
			July			
0300	22.9	5.6	2.0	.4	.1	
0900	10.0	11.1	7.6	2.1	.1	.1
1200	4.6	8.9	12.6	7.3	.6	
1500	4.7	6.9	11.6	7.6	.2	
1800	6.6	9.0	13.0	2.2	.1	.1
2100	19.1	8.0	3.1	.7	.1	
Av.	11.3	7.7	8.4	3.4	.2	
			August			
0300	20.4	6.6	2.7	1.3		
0900	13.4	10.2	5.0	2.4		
1200	5.7	7.7	12.7	4.8	.1	
1500	6.3	8.4	12.3	3.8	.2	
1800	10.3	9.1	9.2	2.4		
2100	18.9	6.9	3.8	1.0	.3	
Av.	12.5	7.5	7.6	3.0	.1	

ILIAMNA

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	7.2	9.3	6.8	3.8	1.9	1.0
0900	7.6	6.2	7.8	3.9	2.7	1.9
1200	5.2	7.1	8.3	4.6	2.7	2.2
1500	4.0	5.1	9.8	6.4	3.0	1.7
1800	6.2	7.4	6.2	5.2	1.4	1.6
2100	9.6	7.9	5.8	3.3	2.3	1.1
Av.	6.6	7.2	7.8	4.5	2.3	1.6
			May			
0300	8.4	10.0	5.6	4.7	1.7	.6
0900	4.1	5.1	7.6	6.8	3.4	1.2
1200	1.7	3.5	9.8	9.3	4.7	1.7
1500	1.8	4.9	5.6	10.7	4.8	1.2
1800	2.8	5.9	9.8	9.0	2.4	.9
2100	9.6	6.9	5.9	4.5	3.0	.8
Av.	4.7	6.4	7.3	7.5	3.5	1.1
			June			
0300	9.5	8.2	5.6	5.1	1.4	.2
0900	4.1	6.7	8.0	8.0	2.6	.6
1200	1.4	5.3	9.0	8.9	4.3	1.1
1500	.9	3.6	9.4	10.3	4.8	1.0
1800	1.6	4.3	9.1	10.8	3.6	.6
2100	7.6	6.6	7.2	7.1	.9	.6
Av.	4.2	5.8	8.0	8.4	2.9	.7
			July			
0300	11.4	9.7	6.7	3.4	.8	
0900	4.8	9.5	9.1	6.1	1.4	.1
1200	2.4	8.2	9.7	9.4	1.2	.1
1500	1.5	7.0	11.3	9.3	2.3	.3
1800	4.1	8.7	10.4	6.2	1.4	.2
2100	9.2	7.6	9.1	4.1	.5	.2
Av.	5.6	7.8	9.4	6.7	1.3	.2
			August			
0300	4.0	6.9	7.6	4.7	1.6	.2
0900	5.8	7.7	9.3	5.6	2.1	.4
1200	3.8	7.1	9.4	7.4	2.4	1.1
1500	2.8	4.8	10.3	9.3	2.3	1.1
1800	3.6	7.2	10.5	8.1	2.2	.1
2100	9.6	8.7	6.3	6.1	2.1	.3
Av.	5.2	7.3	8.9	6.9	2.1	.6

KOTZEBUE

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	3.4	5.9	9.0	6.9	2.7	3.1
0900	3.8	6.0	7.0	5.6	4.0	3.6
1200	2.1	7.0	7.3	5.8	4.4	3.4
1500	1.4	6.6	8.1	6.4	4.2	3.3
1800	1.8	7.2	7.9	6.8	3.6	2.7
2100	2.9	6.8	7.4	6.6	3.4	2.9
Av.	2.6	6.6	7.6	6.3	3.7	3.2
			May			
0300	3.0	9.0	9.6	5.8	2.1	1.2
0900	1.6	7.1	9.7	7.9	3.3	1.4
1200	1.0	5.8	11.1	7.7	3.7	1.3
1500	1.7	6.0	11.2	7.8	2.9	1.4
1800	2.4	6.4	9.2	8.4	3.1	1.1
2100	4.1	6.3	9.7	7.3	2.8	.8
Av.	2.4	6.5	10.1	7.5	3.0	1.2
			June			
0300	1.9	7.0	9.8	8.2	2.4	.7
0900	.6	4.1	13.3	7.5	2.7	1.8
1200	.4	4.2	10.7	9.1	3.8	1.8
1500	.9	5.1	8.3	9.4	4.7	1.6
1800	1.1	4.9	9.3	9.0	4.4	1.3
2100	2.0	5.6	9.7	8.4	3.7	.6
Av.	1.2	5.1	10.2	8.6	3.6	1.3
			July			
0300	1.1	5.2	9.2	9.8	4.7	1.0
0900	.6	4.3	9.6	10.0	5.1	1.4
1200	.4	3.4	11.3	9.1	5.1	1.7
1500	1.0	4.3	9.3	9.0	4.7	2.7
1800	1.2	4.1	8.7	9.0	6.0	2.0
2100	1.6	4.1	9.9	9.4	5.3	1.7
Av.	1.0	4.2	9.7	9.2	5.1	1.5
			August			
0300	1.1	4.4	8.9	9.8	5.6	1.3
0900	1.0	2.8	8.9	9.7	6.8	1.9
1200	.6	2.9	9.2	9.7	6.9	1.8
1500	.9	3.4	9.3	10.4	6.3	1.7
1800	1.2	3.9	9.4	9.4	5.4	1.7
2100	1.7	4.3	9.4	9.7	4.9	1.0
Av.	1.1	3.6	9.0	9.8	6.0	1.5

LAKE MINCHUMINA

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	17.3	6.8	4.2	1.6	0.1	
0900	14.2	8.7	5.0	1.7	.4	
1200	9.3	12.6	5.4	2.4	.2	0.1
1500	10.0	10.9	7.0	1.7	.4	
1800	10.3	10.2	7.1	2.1	.3	
2100	11.6	10.1	6.1	1.3	.4	
Av.	12.1	9.9	5.8	1.9	.3	
			May			
0300	15.5	9.0	3.6	1.8	.1	
0900	7.8	14.7	6.0	2.1	.4	
1200	4.6	14.1	9.1	2.7	.4	.1
1500	6.7	13.7	6.8	3.3	.4	.1
1800	8.8	11.4	6.9	3.1	.6	.2
2100	10.4	12.4	6.5	1.3		.1
Av.	9.1	12.5	6.6	2.4	.3	.1
			June			
0300	16.3	9.2	3.6	.5	.3	
0900	7.2	13.0	7.1	2.1	.4	.2
1200	4.3	13.6	7.8	2.8	1.3	.2
1500	3.7	12.4	8.4	3.8	1.6	.1
1800	6.1	11.0	7.7	3.8	1.3	.1
2100	8.3	12.6	6.6	2.2	.3	
Av.	7.6	12.0	6.8	2.6	.9	.1
			July			
0300	18.0	8.3	3.1	1.3	.3	
0900	9.7	12.7	5.3	2.6	.7	
1200	6.1	14.1	7.2	2.9	.7	.1
1500	5.9	13.3	8.1	2.7	1.0	
1800	10.1	10.1	6.3	4.3	.2	
2100	11.6	11.7	6.0	1.4	.3	
Av.	10.3	11.7	6.0	2.5	.5	
			August			
0300	15.9	9.9	4.1	1.1		
0900	11.6	12.0	4.7	2.4	.3	
1200	6.7	13.7	6.3	3.2	1.0	.1
1500	6.7	12.6	6.9	3.3	1.1	.4
1800	12.2	9.2	6.4	2.4	.6	.2
2100	12.3	11.2	5.7	1.7	.1	
Av.	10.9	11.4	5.7	2.4	.5	.1

Table 28.--Wind velocity by hour of day and number of days per month in each velocity class--Continued

(Av. 1950-58)

McGRATH

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	19.3	6.9	2.8	0.8	0.2	
0900	14.1	8.0	6.8	1.1		
1200	6.3	12.2	8.2	3.2	.1	
1500	5.2	9.3	11.5	3.8	.2	
1800	6.4	11.0	10.7	1.9		
2100	14.9	[illegible]	[illegible]	.3		0.1
Av.	11.0	9.3	7.7	1.9	.1	
			May			
0300	19.3	8.6	2.9	.2		
0900	9.3	10.7	9.2	1.8		
1200	4.3	11.0	10.8	4.8	.1	
1500	2.7	10.4	12.9	4.6	.2	.2
1800	4.8	10.6	11.3	4.1	.2	
2100	12.2	11.4	6.1	1.3		
Av.	8.8	10.4	8.9	2.5	.1	
			June			
0300	18.1	8.4	2.8	.7		
0900	8.6	11.6	7.2	2.6		
1200	5.8	9.9	10.8	3.4		.1
1500	4.4	11.3	9.2	4.8	.3	
1800	4.4	10.8	11.4	3.2	.2	
2100	9.7	12.3	6.3	1.6	.1	
Av.	8.5	10.7	8.0	2.7	.1	
			July			
0300	18.9	8.1	3.1	.7	.2	
0900	12.4	10.4	6.3	1.9		
1200	5.2	12.9	9.6	3.0	.3	
1500	3.8	13.0	10.8	3.2	.2	
1800	4.1	14.3	10.1	2.2	.3	
2100	11.2	12.5	6.1	1.0	.2	
Av.	9.3	11.8	7.7	2.0	.2	
			August			
0300	18.2	8.9	3.1	.7	.1	
0900	11.9	10.2	6.3	2.3	.2	.1
1200	8.2	10.0	9.6	3.0	.2	
1500	6.6	11.1	10.4	2.7	.1	.1
1800	9.3	11.5	8.4	1.4	.3	.1
2100	15.2	9.9	4.1	1.2	.6	
Av.	11.6	10.2	7.0	1.9	.2	.1

NAKNEK

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	8.9	8.4	7.1	[illegible]	[illegible]	0.3
0900	5.0	[illegible]	[illegible]	5.1	3.1	1.3
1200	2.1	4.9	9.9	7.1	3.4	[illegible]
1500	2.2	4.1	[illegible]	9.3	3.9	2.4
1800	2.7	[illegible]	10.9	7.3	2.9	1.4
2100	7.1	8.3	7.7	4.6	1.2	1.1
Av.	4.7	6.2	8.8	6.2	[illegible]	1.5
			May			
0300	8.9	6.6	8.7	4.6	1.4	.9
0900	4.7	5.7	7.7	6.3	4.2	2.1
1200	2.7	5.4	7.6	7.9	4.2	3.2
1500	1.8	2.6	9.1	9.3	5.4	2.8
1800	2.2	4.2	8.4	9.8	4.1	2.2
2100	5.8	6.9	9.6	5.7	2.0	1.1
Av.	4.4	5.2	9.5	7.3	3.6	[illegible]
			June			
0300	7.9	7.8	9.3	3.3	.8	.9
0900	6.1	6.8	9.1	5.2	1.4	1.4
1200	3.9	5.4	10.8	[illegible]	2.9	[illegible]
1500	2.8	[illegible]	9.9	9.4	2.3	[illegible]
1800	1.4	3.4	11.9	8.3	3.1	1.9
2100	3.9	7.0	10.2	6.2	[illegible]	.9
Av.	4.3	5.7	[illegible]	6.3	2.0	1.4
			July			
0300	9.0	9.0	9.3	3.2	.3	.2
0900	[illegible]	[illegible]	10.9	[illegible]	1.4	.4
1200	3.6	6.7	12.4	5.7	1.6	1.0
1500	2.4	5.3	12.0	6.8	2.7	.8
1800	1.3	4.8	13.4	9.1	1.8	.6
2100	6.6	10.1	10.1	3.1	.7	.4
Av.	4.8	7.4	11.4	5.4	1.4	.6
			August			
0300	7.6	7.6	9.7	4.6	.8	.7
0900	3.7	7.2	11.4	5.6	2.1	1.0
1200	1.8	5.0	11.7	7.9	2.9	1.7
1500	1.6	4.8	10.8	9.4	3.1	1.3
1800	2.4	6.0	10.4	9.3	2.7	1.2
2100	6.2	7.6	9.7	4.8	2.0	.7
Av.	3.9	6.4	[illegible]	6.8	2.2	1.1

NORTHWAY

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	14.7	9.7	4.1	1.4	[illegible]	
0900	[illegible]	[illegible]	8.2	3.6	.6	
1200	[illegible]	[illegible]	9.3	4.6	.4	
1500	[illegible]	[illegible]	[illegible]	[illegible]	.3	
1800	[illegible]	11.2	[illegible]	1.9	.1	
2100	[illegible]	[illegible]	[illegible]	1.3	.2	
Av.	[illegible]	9.4	7.8	2.9	.3	
			May			
0300	16.0	8.9	[illegible]	[illegible]		
0900	6.6	8.8	[illegible]	[illegible]	.1	
1200	4.1	7.9	13.7	5.0	.3	
1500	[illegible]	7.9	[illegible]	[illegible]	.4	
1800	3.4	9.0	12.8	[illegible]	.1	
2100	10.6	10.3	8.0	2.1		
Av.	[illegible]	[illegible]	[illegible]	4.1	.2	
			June			
0300	12.8	10.7	5.1	[illegible]	[illegible]	
0900	5.4	9.9	10.2	3.9	[illegible]	
1200	4.3	8.2	[illegible]	4.6	.6	
1500	3.1	6.9	13.1	6.2	.7	
1800	4.2	7.9	12.3	5.4	.2	
2100	[illegible]	9.1	[illegible]	[illegible]	.1	
Av.	6.5	8.8	10.4	3.9	.4	
			July			
0300	14.9	9.7	5.6	.8		
0900	6.7	11.2	9.4	3.6	.1	
1200	6.4	9.4	11.8	4.2	.1	0.1
1500	4.2	10.6	11.2	4.6	.4	
1800	5.3	10.7	11.3	3.6	.1	
2100	9.2	12.6	7.3	1.7	.2	
Av.	7.8	10.5	9.4	3.1	.2	
			August			
0300	15.7	9.6	5.0	.6	.1	
0900	6.8	10.5	10.7	2.8	.2	
1200	[illegible]	[illegible]	12.4	3.2	.8	
1500	6.2	9.4	10.8	4.5	.1	
1800	8.4	12.0	9.0	1.5	.1	
2100	12.1	11.7	6.2	1.0		
Av.	9.1	10.4	[illegible]	2.3	.2	

SUMMIT

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	10.1	6.4	7.4	4.7	1.2	0.2
0900	7.8	4.4	9.1	6.6	2.1	
1200	8.1	5.6	9.7	5.4	.9	.3
1500	6.7	7.6	9.2	5.6	.8	.1
1800	8.8	6.1	9.5	4.7	.6	.1
2100	9.4	6.3	8.7	4.1	1.4	.1
Av.	8.5	6.1	8.9	5.2	1.2	.1
			May			
0300	13.4	7.8	6.9	2.6	.3	
0900	5.3	7.0	[illegible]	5.8	.9	
1200	2.3	5.3	13.7	8.3	1.4	
1500	2.6	6.6	12.6	7.7	1.2	.3
1800	5.0	7.3	12.4	5.1	.9	.3
2100	9.7	8.4	9.3	3.1	.4	.1
Av.	6.4	7.1	11.2	5.4	.8	.1
			June			
0300	10.1	9.8	7.9	1.8	.4	
0900	3.7	7.0	13.1	5.9	.3	
1200	3.0	5.6	14.0	5.6	1.8	
1500	2.1	5.0	11.0	9.6	2.3	
1800	1.3	6.1	10.7	10.1	1.6	.2
2100	5.6	9.6	11.2	3.2	.4	
Av.	4.3	7.2	11.3	6.0	1.2	
			July			
0300	11.1	9.8	7.4	2.6	.1	
0900	5.9	8.7	10.8	4.9	.7	
1200	5.0	7.3	11.8	5.8	1.1	.1
1500	2.9	6.0	12.4	6.7	1.0	
1800	3.8	5.0	13.6	7.2	1.4	
2100	5.9	10.2	11.8	2.8	.3	
Av.	5.8	7.8	11.3	5.3	.8	
			August			
0300	13.8	6.2	7.3	3.0	.6	.1
0900	6.4	8.0	11.0	4.7	.9	
1200	4.7	5.9	11.8	8.0	.6	
1500	4.1	6.1	10.3	9.3	1.2	.1
1800	4.6	6.8	13.1	5.9	.6	.1
2100	10.6	9.0	8.6	2.4	.4	
Av.	7.4	7.0	10.3	5.5	.7	.1

TANANA

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	14.8	7.7	5.9	1.3	0.2	0.1
0900	8.4	5.6	10.0	5.4	.6	
1200	5.7	6.3	11.3	6.4	.3	
1500	5.2	5.6	13.5	4.9	.6	.2
1800	3.9	8.6	12.3	4.1	1.0	.1
2100	9.2	9.5	8.0	2.6	.6	.1
Av.	7.9	7.2	10.2	4.1	.5	.1
			May			
0300	18.9	6.9	4.0	1.2		
0900	6.2	8.6	10.0	5.8	.4	
1200	3.4	9.3	11.3	6.1	.9	
1500	4.1	7.3	12.9	5.9	.8	
1800	5.8	7.7	10.2	7.1	.2	
2100	10.4	11.7	6.1	2.7	.1	
Av.	8.1	8.6	9.1	4.8	.4	
			June			
0300	14.3	9.9	5.0	.7	.1	
0900	7.4	7.6	11.1	3.7	.2	
1200	4.7	8.1	11.8	5.1	.3	
1500	4.2	9.1	11.7	4.8	.1	.1
1800	5.9	10.1	9.4	4.2	.3	.1
2100	10.3	10.3	7.8	1.4	.2	
Av.	7.8	9.2	9.5	3.3	.2	
			July			
0300	18.0	9.3	3.3	.4		
0900	9.0	10.2	9.7	2.0	.1	
1200	16.0	8.8	3.3	2.8	.1	
1500	5.6	9.2	14.1	2.0	.1	
1800	7.9	8.6	12.1	2.4		
2100	13.1	11.4	5.7	[illegible]		
Av.	11.6	9.6	8.0	1.7	.1	
			August			
0300	13.1	11.9	5.3	.7		
0900	7.1	10.6	11.4	1.9		
1200	4.6	10.0	13.9	2.4	.1	
1500	5.6	7.9	15.2	2.1	.2	
1800	8.8	10.8	9.3	1.9	.2	
2100	11.2	12.0	6.8	1.0		
Av.	8.4	10.5	10.3	1.7	.1	

UNALAKLEET

Time of day	0-3	4-7	8-12	13-18	19-24	25+
			April			
0300	5.6	6.7	7.0	6.2	3.4	1.1
0900	4.9	5.8	8.0	5.1	4.1	2.1
1200	3.4	6.4	7.6	7.0	3.9	1.7
1500	3.2	6.7	7.8	6.8	3.8	1.7
1800	3.6	7.4	8.5	6.2	2.7	1.6
2100	5.3	8.3	7.2	5.0	3.2	[illegible]
Av.	4.3	6.9	7.7	6.1	3.5	[illegible]
			May			
0300	6.1	[illegible]	10.3	5.9	1.1	
0900	2.4	[illegible]	9.9	7.8	3.6	.3
1200	[illegible]	4.7	12.1	7.4	[illegible]	.7
1500	1.7	4.7	[illegible]	9.7	2.7	1.6
1800	4.0	6.6	10.9	7.2	1.7	[illegible]
2100	5.9	9.3	[illegible]	3.9	.8	.1
Av.	3.6	6.6	10.8	7.0	2.4	.6
			June			
0300	3.8	10.6	10.7	4.2	.6	.1
0900	3.2	8.3	12.2	4.7	1.3	.3
1200	1.4	5.6	13.3	7.6	1.7	.4
1500	1.6	6.0	12.4	7.1	2.3	.6
1800	2.6	6.9	13.2	6.1	1.2	
2100	5.3	11.0	9.9	3.3	.4	.1
Av.	3.0	8.1	12.0	5.5	1.2	.2
			July			
0300	5.0	8.3	10.1	[illegible]	2.0	.4
0900	[illegible]	7.6	10.1	7.3	2.2	.8
1200	1.2	[illegible]	12.4	9.4	2.4	.6
1500	1.0	5.3	12.4	10.2	1.4	.7
1800	2.4	7.1	[illegible]	6.9	[illegible]	.6
2100	6.4	9.4	9.2	4.8	1.6	.6
Av.	3.2	6.9	11.2	7.3	1.8	.6
			August			
0300	4.6	8.6	10.5	5.0	1.9	.4
0900	3.2	6.3	11.4	6.9	2.4	.8
1200	1.7	6.4	9.8	9.2	3.1	.5
1500	2.1	6.0	11.9	8.3	1.9	.8
1800	5.2	7.4	11.3	4.4	2.1	.6
2100	6.6	7.8	11.0	3.3	1.4	.9
Av.	3.9	7.1	11.0	6.2	2.1	.7

Source: United States Weather Bureau coded data.

Table 29.--Amount of cloud cover by hour of day, and number of days per month in each cover class

(Av. 1[illegible])

ANCHORAGE

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	10.8	3.0	16.2
0900	8.6	3.8	17.7
1200	7.9	3.3	18.9
1500	7.4	4.2	18.3
1800	7.2	4.7	18.1
2100	9.3	3.6	16.7
Av.	8.5	3.8	17.6
May			
0300	4.7	3.9	21.4
0900	5.8	4.2	21.0
1200	4.9	4.2	21.9
1500	3.9	4.0	22.6
1800	4.3	4.3	22.3
2100	5.6	4.9	20.7
Av.	5.0	4.3	21.7
June			
0300	4.7	4.1	21.2
0900	3.6	4.2	22.2
1200	4.6	4.9	20.6
1500	5.0	5.6	19.4
1800	4.5	5.0	20.5
2100	4.0	5.8	20.2
Av.	4.4	4.9	20.7
July			
0300	5.7	4.7	20.7
0900	5.6	4.2	21.2
1200	7.2	4.1	19.7
1500	6.8	4.7	19.6
1800	7.0	4.7	19.3
2100	6.2	5.0	19.7
Av.	6.4	4.6	20.0
August			
0300	4.8	3.4	22.5
0900	3.8	4.4	22.8
1200	4.2	4.4	22.3
1500	4.6	5.0	21.4
1800	4.3	5.1	21.6
2100	5.2	4.6	21.3
Av.	4.5	4.5	22.0

BETHEL

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	11.4	3.2	15.2
0900	7.0	2.9	20.1
1200	6.2	2.9	20.9
1500	6.7	4.7	18.7
1800	8.4	3.4	18.1
2100	8.8	4.3	16.3
Av.	8.1	3.6	18.3
May			
0300	5.3	3.9	21.8
0900	5.2	3.9	21.9
1200	4.3	3.9	22.8
1500	4.3	3.6	23.1
1800	4.2	4.8	22.0
2100	5.7	5.1	20.2
Av.	4.8	4.2	22.0
June			
0300	4.4	4.0	21.6
0900	2.9	3.4	23.7
1200	3.4	3.2	23.3
1500	3.9	4.4	21.7
1800	4.4	3.6	22.0
2100	4.3	4.1	21.6
Av.	3.9	3.8	22.3
July			
0300	3.3	2.3	25.3
0900	2.6	2.9	25.5
1200	2.7	2.3	25.0
1500	2.6	3.2	25.2
1800	4.0	3.8	23.2
2100	4.8	3.3	22.9
Av.	3.3	3.0	24.7
August			
0300	2.2	2.7	26.1
0900	1.0	1.3	28.7
1200	1.0	1.9	28.1
1500	1.0	2.8	27.2
1800	1.4	3.0	26.6
2100	2.4	3.0	25.6
Av.	1.5	2.4	27.1

BEETLES

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	13.6	4.2	12.2
0900	11.0	4.4	14.6
1200	11.7	3.9	14.5
1500	11.6	4.3	14.1
1800	11.4	5.3	13.2
2100	14.3	4.7	11.0
Av.	12.3	4.5	13.2
May			
0300	10.1	5.5	15.1
0900	10.1	6.2	14.7
1200	7.6	8.2	15.2
1500	6.7	8.0	15.6
1800	8.3	6.3	16.3
2100	9.3	6.7	15.0
Av.	8.7	7.0	15.3
June			
0300	7.9	6.4	15.7
0900	6.9	8.1	15.0
1200	5.1	9.0	15.9
1500	4.6	10.7	14.6
1800	6.9	8.8	14.3
2100	7.8	8.9	13.3
Av.	6.5	8.7	14.8
July			
0300	6.8	6.2	18.0
0900	5.4	5.9	19.7
1200	4.7	6.9	19.5
1500	3.9	8.1	19.0
1800	4.7	8.4	17.9
2100	6.8	6.2	18.0
Av.	5.4	6.9	18.7
August			
0300	5.0	5.0	21.0
0900	4.1	3.7	23.2
1200	3.2	5.0	22.8
1500	2.4	6.3	22.2
1800	3.6	7.3	19.9
2100	6.3	4.8	19.9
Av.	4.1	5.4	21.5

BIG DELTA

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	12.2	4.9	12.9
0900	8.7	6.0	15.3
1200	8.7	6.7	14.7
1500	7.8	7.0	15.2
1800	7.8	5.8	16.4
2100	11.9	6.3	11.8
Av.	9.5	6.1	14.4
May			
0300	7.9	7.2	15.9
0900	6.9	8.2	15.9
1200	4.8	8.4	17.8
1500	3.6	8.2	18.9
1800	4.4	7.0	19.6
2100	7.8	7.2	16.2
Av.	5.9	7.7	17.4
June			
0300	5.1	6.2	18.7
0900	6.2	5.3	18.3
1200	5.8	7.7	16.6
1500	5.2	6.7	18.1
1800	5.0	6.9	18.1
2100	4.7	8.0	17.3
Av.	5.3	6.8	17.9
July			
0300	5.9	5.4	19.7
0900	6.6	5.7	18.6
1200	6.3	7.2	17.3
1500	5.9	7.6	17.6
1800	6.9	6.4	17.7
2100	5.4	7.6	18.0
Av.	6.2	6.6	18.2
August			
0300	6.7	4.8	19.6
0900	5.7	5.6	19.8
1200	5.8	7.7	17.6
1500	4.6	7.7	18.8
1800	4.5	6.6	19.4
2100	6.3	5.6	19.1
Av.	5.6	6.3	19.1

FAIRBANKS

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	12.2	4.0	13.8
0900	9.6	4.6	15.9
1200	9.5	4.4	15.1
1500	10.6	4.1	15.3
1800	9.3	4.3	16.3
2100	12.1	4.1	13.8
Av.	10.6	4.3	15.1
May			
0300	9.8	4.3	16.9
0900	7.8	5.3	17.9
1200	5.0	5.3	20.7
1500	4.7	5.4	20.9
1800	5.7	5.1	20.2
2100	8.0	5.9	17.1
Av.	6.8	5.2	19.0
June			
0300	5.4	5.6	18.9
0900	6.1	4.9	18.8
1200	5.1	5.8	19.1
1500	3.7	7.2	19.1
1800	4.6	6.6	18.9
2100	6.0	5.9	18.1
Av.	5.2	6.0	18.8
July			
0300	5.4	4.6	21.0
0900	6.6	4.3	19.9
1200	5.6	5.8	19.7
1500	6.0	5.3	19.7
1800	6.6	5.3	19.1
2100	6.3	5.1	19.4
Av.	6.1	5.1	19.8
August			
0300	5.1	4.3	21.6
0900	4.8	3.0	23.2
1200	4.7	4.6	21.6
1500	2.7	6.1	22.2
1800	3.9	5.0	22.1
2100	4.7	5.1	21.2
Av.	4.3	4.7	22.0

FT. YUKON

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	16.2	1.9	11.0
0900	11.5	4.9	14.0
1200	12.1	5.4	13.0
1500	11.9	4.8	14.0
1800	11.9	4.7	13.0
2100	14.7	2.5	12.0
Av.	13.1	4.1	12.6
May			
0300	16.0	4.8	10.2
0900	13.1	4.5	13.0
1200	10.8	7.0	13.2
1500	9.8	7.8	13.4
1800	10.2	7.6	12.5
2100	12.3	6.9	11.8
Av.	12.1	6.5	12.4
June			
0300	11.7	6.9	11.4
0900	9.9	7.4	12.7
1200	7.9	9.4	12.7
1500	6.9	8.7	14.4
1800	6.1	8.5	15.4
2100	9.2	7.6	13.1
Av.	8.6	8.1	13.3
July			
0300	12.4	5.9	12.7
0900	10.0	5.4	15.6
1200	6.5	7.9	16.3
1500	6.2	8.6	16.2
1800	7.4	9.1	[illegible]
2100	9.4	6.4	[illegible]
Av.	8.7	7.2	15.1
August			
0300	10.4	5.6	15.0
0900	8.7	5.2	17.1
1200	6.3	9.3	15.3
1500	5.1	9.8	16.1
1800	5.1	8.1	17.5
2100	5.9	6.0	18.9
Av.	7.4	7.3	16.3

GALENA

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	11.6	4.7	13.8
0900	9.6	4.3	16.1
1200	9.8	4.1	16.1
1500	9.6	4.0	16.2
1800	10.0	4.1	15.8
2100	11.0	3.3	15.7
Av.	10.3	4.1	15.6
May			
0300	8.6	5.0	17.4
0900	8.3	4.7	18.0
1200	6.3	5.1	19.6
1500	5.4	5.6	20.0
1800	5.6	5.7	19.7
2100	8.0	6.3	16.7
Av.	7.0	5.6	18.4
June			
0300	5.3	7.0	17.7
0900	6.4	6.0	17.6
1200	4.9	5.9	19.2
1500	3.8	6.6	19.7
1800	3.6	6.7	19.8
2100	4.8	6.8	18.4
Av.	4.8	6.5	18.7
July			
0300	4.5	5.0	21.5
0900	4.2	5.4	21.4
1200	4.0	5.2	21.8
1500	4.0	5.5	21.5
1800	3.4	6.2	21.4
2100	4.1	5.8	21.1
Av.	4.0	5.5	21.5
August			
0300	4.0	3.8	23.2
0900	3.0	3.0	25.0
1200	2.4	3.0	25.6
1500	1.9	3.9	25.2
1800	2.8	4.2	24.0
2100	3.0	4.8	23.2
Av.	2.8	3.8	24.4

GULKANA

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	14.6	4.4	11.0
0900	10.7	5.0	14.3
1200	9.0	5.6	15.4
1500	7.9	4.3	17.8
1800	8.1	6.2	15.7
2100	13.9	4.3	11.8
Av.	10.7	5.0	14.3
May			
0300	8.7	6.0	16.3
0900	6.3	5.8	18.9
1200	4.1	6.4	20.4
1500	4.1	4.8	22.1
1800	4.4	7.9	18.7
2100	7.7	6.8	16.6
Av.	5.9	6.3	18.8
June			
0300	7.6	5.2	17.2
0900	6.7	7.3	16.0
1200	5.6	6.2	18.2
1500	4.0	6.3	19.7
1800	5.0	6.8	18.2
2100	5.8	6.9	17.3
Av.	5.8	6.4	17.8
July			
0300	8.6	4.9	17.6
0900	7.9	5.0	18.1
1200	6.2	6.8	18.0
1500	5.7	7.1	18.2
1800	5.0	5.8	20.2
2100	7.6	4.7	18.6
Av.	6.8	5.7	18.5
August			
0300	7.3	5.8	17.9
0900	6.8	4.5	19.7
1200	6.1	5.8	19.1
1500	6.6	5.7	18.8
1800	6.1	6.1	18.8
2100	8.2	6.2	16.6
Av.	6.8	5.7	18.5

HOMER

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	9.7	3.9	16.4
0900	7.8	4.1	18.1
1200	8.1	4.1	17.8
1500	8.1	3.8	18.1
1800	8.3	4.8	16.9
2100	11.2	3.1	15.7
Av.	8.9	3.9	17.2
May			
0300	6.3	4.1	20.6
0900	5.6	4.6	20.9
1200	5.4	4.6	20.8
1500	4.8	5.1	21.1
1800	5.3	5.0	20.7
2100	7.2	4.7	19.1
Av.	5.8	4.7	20.5
June			
0300	6.3	4.6	19.1
0900	5.9	5.1	19.0
1200	6.2	4.3	19.4
1500	6.2	5.4	18.3
1800	7.3	5.4	17.2
2100	7.6	4.7	17.8
Av.	6.6	4.9	18.5
July			
0300	8.7	4.1	18.2
0900	8.2	5.1	17.7
1200	7.6	5.7	17.8
1500	8.9	5.0	17.1
1800	8.0	5.0	17.9
2100	8.8	5.3	16.8
Av.	8.4	5.0	17.6
August			
0300	6.9	2.4	21.7
0900	5.7	4.6	20.8
1200	5.4	4.4	21.1
1500	5.0	4.8	21.2
1800	6.1	3.8	21.1
2100	7.0	5.0	19.0
Av.	6.0	4.2	20.8

ILIAMNA

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	10.7	3.9	15.4
0900	8.1	4.4	17.6
1200	9.2	4.4	16.3
1500	9.6	4.4	16.0
1800	8.8	5.6	15.7
2100	10.7	4.1	15.0
Av.	9.5	4.5	16.0
May			
0300	6.0	4.6	20.4
0900	5.3	6.2	19.4
1200	5.0	7.1	18.9
1500	5.8	6.2	19.0
1800	6.5	5.6	18.7
2100	6.2	5.2	19.4
Av.	5.9	5.9	19.3
June			
0300	5.7	4.2	20.1
0900	5.2	4.8	20.0
1200	4.9	5.6	19.6
1500	5.6	6.3	18.1
1800	5.6	6.8	17.7
2100	4.7	7.0	18.3
Av.	5.2	5.8	19.0
July			
0300	5.8	3.9	21.3
0900	5.0	3.7	22.3
1200	4.3	4.8	21.9
1500	5.8	5.4	19.6
1800	6.2	5.8	19.0
2100	5.4	6.2	19.3
Av.	5.4	5.0	20.6
August			
0300	5.3	3.0	22.7
0900	2.8	4.4	23.8
1200	1.9	5.3	23.8
1500	2.6	6.4	22.0
1800	2.9	6.1	22.0
2100	3.3	5.7	22.0
Av.	3.1	5.2	22.7

KOTZEBUE

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	10.8	3.6	15.7
0900	9.1	3.6	17.2
1200	10.2	3.8	16.0
1500	11.0	3.6	15.4
1800	11.1	3.9	14.9
2100	12.2	2.3	15.5
Av.	10.7	3.5	15.8
May			
0300	9.8	3.0	18.4
0900	9.7	4.2	17.1
1200	10.4	4.7	15.9
1500	10.4	4.7	15.9
1800	12.3	3.6	15.1
2100	11.9	3.7	15.3
Av.	10.7	4.0	16.3
June			
0300	6.6	3.5	19.6
0900	7.1	4.3	18.6
1200	8.3	4.4	17.3
1500	9.7	5.0	15.2
1800	9.3	4.4	16.2
2100	8.2	4.6	16.9
Av.	8.2	4.5	17.3
July			
0300	3.9	3.0	24.1
0900	4.2	2.7	24.1
1200	5.8	4.3	20.9
1500	6.2	5.1	19.7
1800	6.1	4.4	20.3
2100	6.2	3.7	21.1
Av.	5.4	3.9	21.7
August			
0300	3.4	2.0	25.6
0900	3.4	2.0	25.6
1200	5.0	2.3	23.7
1500	3.9	4.0	23.1
1800	4.7	3.2	23.1
2100	4.2	3.3	23.4
Av.	4.1	2.8	24.1

LAKE MINCHUMINA

Time of day	Cloud cover (tenths) 0-3	4-7	8-10
April			
0300	12.9	3.5	13.6
0900	11.2	3.8	15.0
1200	10.2	4.2	15.6
1500	8.6	4.1	17.3
1800	8.7	4.2	17.1
2100	13.1	3.1	13.8
Av.	10.8	3.8	15.4
May			
0300	5.0	6.1	18.9
0900	6.2	5.9	18.9
1200	6.2	6.2	18.6
1500	5.5	6.9	18.7
1800	6.1	6.4	[illegible]
2100	9.2	4.3	17.4
Av.	7.2	5.0	17.8
June			
0300	5.0	6.0	19.2
0900	6.2	5.9	17.9
1200	4.5	6.6	18.4
1500	3.0	6.9	20.1
1800	3.4	6.4	20.1
2100	4.7	5.0	20.2
Av.	4.6	6.2	19.2
July			
0300	6.6	4.7	19.6
0900	7.0	3.1	20.9
1200	5.4	4.9	20.7
1500	4.9	5.4	20.7
1800	4.9	5.9	20.2
2100	5.3	6.0	19.7
Av.	5.7	5.0	20.3
August			
0300	5.7	3.4	21.8
0900	3.9	3.6	23.5
1200	3.2	4.0	23.8
1500	2.5	4.3	23.9
1800	3.2	5.3	22.4
2100	4.3	4.2	22.4
Av.	3.9	4.1	23.0

Table 29.--Amount of cloud cover by hour of day, and number of days per month in each cover class--Continued

(Av. 1950-58)

Time of day	McGRATH Cloud cover (tenths) 0-3	4-7	8-10	NAKNEK Cloud cover (tenths) 0-3	4-7	8-10
April						
0300	1[illegible].7	3.6	15.8	10.2	3.2	16.6
0900	9.6	4.6	15.9	6.7	3.9	19.4
1200	9.7	4.2	16.1	6.1	3.8	20.1
1500	8.6	5.4	16.0	5.2	5.6	19.2
1800	8.6	4.6	16.9	6.9	4.4	18.7
2100	11.1	4.1	14.8	9.8	4.6	15.7
Av.	9.7	4.4	15.9	7.5	4.2	18.3
May						
0300	7.2	5.1	18.7	5.3	4.1	21.6
0900	7.8	4.2	19.0	3.3	3.3	24.3
1200	5.4	4.9	20.7	2.3	5.4	23.2
1500	4.3	5.9	20.8	2.0	4.9	24.1
1800	5.2	5.1	20.7	3.0	5.7	22.3
2100	7.3	4.4	19.3	3.1	7.6	19.7
Av.	6.2	4.9	19.9	3.2	5.2	22.6
June						
0300	5.1	4.7	20.2	3.3	4.3	22.3
0900	5.3	3.9	20.8	2.7	4.0	23.3
1200	4.1	5.1	20.8	3.1	3.7	23.2
1500	3.7	4.8	21.6	2.9	5.4	21.7
1800	3.7	5.8	20.6	3.6	5.2	21.2
2100	5.3	4.6	20.1	3.8	4.9	21.3
Av.	4.5	4.8	20.7	3.2	4.6	22.2
July						
0300	4.6	3.8	22.7	2.8	3.0	25.2
0900	5.9	3.6	21.6	3.3	2.2	25.4
1200	4.2	5.0	21.8	3.2	3.4	24.3
1500	3.7	5.1	22.2	2.9	4.2	23.9
1800	4.3	3.4	23.2	3.1	5.0	22.9
2100	4.3	3.7	23.0	3.4	4.2	23.3
Av.	4.5	4.1	22.4	3.1	3.7	24.2
August						
0300	3.7	3.1	24.1	3.3	2.8	24.9
0900	3.0	1.9	26.1	2.0	1.6	27.4
1200	2.2	3.8	25.0	1.4	3.6	26.0
1500	1.7	3.4	25.9	1.1	4.3	25.6
1800	3.6	3.4	24.0	2.1	4.9	24.0
2100	4.0	3.6	23.4	2.4	4.9	23.7
Av.	3.0	3.2	24.8	2.0	3.7	25.3

Time of day	NORTHWAY Cloud cover (tenths) 0-3	4-7	8-10	SUMMIT Cloud cover (tenths) 0-3	4-7	8-10
April						
0300	8.4	4.6	16.9	11.3	4.3	14.3
0900	8.6	4.7	16.8	9.9	3.7	16.4
1200	7.3	5.4	17.2	9.7	3.3	17.0
1500	7.1	5.3	17.6	7.4	4.8	17.8
1800	6.9	5.3	17.8	8.1	5.1	16.8
2100	10.1	4.1	15.8	10.3	4.3	15.3
Av.	8.1	4.9	17.0	9.5	4.2	16.3
May						
0300	3.8	7.0	20.2	7.2	3.7	20.1
0900	4.1	6.2	20.7	6.7	4.6	19.8
1200	2.8	5.9	22.3	5.3	7.6	18.0
1500	2.3	4.7	24.0	5.4	6.2	19.3
1800	3.6	4.9	22.6	6.1	6.2	18.7
2100	5.0	5.6	20.4	7.7	5.2	18.0
Av.	3.6	5.7	21.7	6.4	5.6	19.0
June						
0300	3.6	4.3	21.9	4.6	3.9	21.6
0900	4.8	5.3	19.9	4.0	3.9	22.1
1200	3.2	7.3	19.6	2.8	4.9	22.3
1500	2.9	5.0	22.3	3.3	5.8	20.9
1800	3.1	5.1	21.8	3.3	6.7	20.0
2100	2.9	4.7	21.8	4.2	5.3	20.4
Av.	3.4	5.3	21.3	3.7	5.1	21.2
July						
0300	3.4	5.7	21.8	5.7	3.2	22.1
0900	4.9	6.4	19.7	5.1	3.2	22.6
1200	4.3	6.4	20.2	4.4	4.9	21.7
1500	3.3	7.3	20.3	4.1	5.7	21.2
1800	4.2	5.9	20.9	5.0	4.0	22.0
2100	4.8	5.3	20.9	6.3	3.7	20.9
Av.	4.2	6.2	20.6	5.1	4.1	21.8
August						
0300	4.4	4.6	22.0	4.2	4.1	22.7
0900	4.6	4.8	21.6	2.9	2.9	25.2
1200	3.4	6.1	21.5	2.6	4.0	24.4
1500	2.1	7.2	21.6	3.0	3.1	24.9
1800	3.1	6.6	21.2	3.1	3.7	24.2
2100	5.2	5.9	19.9	4.8	3.3	22.9
Av.	3.8	5.9	21.3	3.4	3.5	24.1

Time of day	TANANA Cloud cover (tenths) 0-3	4-7	8-10	UNALAKLEET Cloud cover (tenths) 0-3	4-7	8-10
April						
0300	13.7	5.1	11.2	1[illegible].4	[illegible].4	[illegible]
0900	11.9	5.7	12.4	7.8	4.4	17.7
1200	12.1	4.8	13.1	8.3	5.1	16.6
1500	10.9	4.9	14.1	9.8	3.8	16.5
1800	10.6	6.4	13.0	8.9	4.1	17.2
2100	14.2	4.8	11.0	10.8	4.6	14.7
Av.	12.2	5.3	12.5	9.3	4.2	16.5
May						
0300	10.9	6.8	13.6	7.9	5.1	18.0
0900	9.1	6.2	15.7	8.7	5.0	17.3
1200	7.1	7.6	16.3	7.4	5.9	17.7
1500	5.9	8.3	16.8	6.9	6.2	17.9
1800	7.8	5.4	17.3	7.1	6.2	17.7
2100	9.0	7.4	14.6	8.2	5.4	17.3
Av.	8.3	6.9	15.8	7.7	5.6	17.7
June						
0300	7.1	8.3	14.6	5.3	4.6	20.1
0900	6.7	8.3	15.0	5.4	5.6	19.0
1200	4.8	8.2	17.0	5.4	6.2	18.3
1500	3.2	10.2	16.6	5.7	6.2	18.1
1800	4.7	8.7	16.7	5.4	6.6	18.0
2100	5.0	8.6	16.5	5.7	5.3	19.0
Av.	5.2	8.7	16.1	5.5	5.8	18.7
July						
0300	8.2	4.3	18.4	3.3	5.7	22.0
0900	6.2	6.4	18.3	3.2	4.8	23.0
1200	4.7	6.8	19.6	3.7	6.1	21.2
1500	4.2	6.0	20.8	4.2	6.6	20.2
1800	3.9	7.1	20.0	4.1	6.0	20.9
2100	4.6	7.1	19.3	3.9	5.9	21.2
Av.	5.3	6.3	19.4	3.7	5.9	21.4
August						
0300	5.2	3.8	22.0	3.0	3.1	24.9
0900	3.4	5.4	22.1	2.7	3.1	25.2
1200	3.1	5.4	22.4	2.4	3.4	25.1
1500	2.3	5.4	23.2	2.4	3.4	25.1
1800	3.8	6.0	21.3	2.4	3.4	25.1
2100	6.1	4.1	20.8	3.2	3.8	24.0
Av.	4.0	5.0	22.0	2.7	3.4	24.9

Source: United States Weather Bureau coded data.

Table 30.--Visibility distance by hour of day, and number of days per month in each distance class

(Av. 1950-58)

ANCHORAGE

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			April			
0300		0.1	0.1	0.8	0.7	28.3
0900			.2	.2	1.2	28.4
1200			.1	.3	1.0	28.6
1500				.4	1.0	28.6
1800				.5	.4	29.3
2100				.3	.4	29.3
Av.			.1	.5	.8	28.6
			May			
0300			.1		.1	30.8
0900		.1				30.9
1200						31.0
1500						31.0
1800					.1	30.9
2100					.2	30.8
Av.					.1	30.9
			June			
0300	0.1		.2		.9	28.8
0900					.5	29.2
1200					.3	29.7
1500				.2	.1	29.7
1800					.2	29.5
2100					.4	29.6
Av.					.5	29.5
			July			
0300	.1	.1		.3	1.7	28.8
0900				.4	1.2	29.4
1200				.3	1.3	29.4
1500			.2		1.0	29.8
1800			.2	.2	.8	29.8
2100	.1			.3	1.6	29.0
Av.			.1	.2	1.3	29.4
			August			
0300	.3		.2	.2	1.0	29.3
0900				.4	1.2	29.4
1200				.1	.8	30.1
1500					.7	30.3
1800			.1	.1	.4	30.4
2100					1.2	29.6
Av.	.1		.1	.1	.9	29.5

[illegible]

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			April			
0300			0.3	1.7	3.1	25.0
0900		0.1	.2	1.3	1.4	26.0
1200			.2	.8	1.6	27.4
1500			.2	.9	2.1	26.8
1800			.2	1.2	1.4	27.2
2100		.2	.3	.9	2.1	26.5
Av.		.1	.2	1.1	2.1	26.5
			May			
0300	0.3	.4	.2	.6	.9	28.6
0900			.1	.6	1.3	29.0
1200				.2	.7	30.1
1500				.3	.7	30.0
1800			.1		.4	30.5
2100			.1	.1	.6	30.2
Av.	.1	.1	.1	.3	.7	29.7
			June			
0300	.2	.7	.7	.4	1.7	26.3
0900				1.0	1.9	27.1
1200				.4	.8	28.8
1500				.2	.7	29.1
1800					.8	29.2
2100				.2	.4	29.4
Av.		.1	.1	.4	1.1	28.3
			July			
0300	.1	.3	.7	2.1	3.3	24.5
0900			.1	2.1	2.7	26.1
1200				.9	2.0	28.1
1500				.8	1.6	28.6
1800				.7	1.9	28.4
2100				1.1	1.7	28.2
Av.		.1	.1	1.3	2.2	27.3
			August			
0300	.3	.7	1.1	1.9	4.3	22.7
0900			.2	4.4	3.6	22.8
1200				1.6	4.2	25.2
1500				.9	3.8	26.3
1800				1.6	2.7	26.7
2100			.1	1.9	3.4	25.6
Av.	.1	.1	.2	2.0	3.7	24.9

[illegible]

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			April			
0300			0.4	0.8	1.1	27.7
0900			.2	.8	1.0	28.0
1200		0.1	.1	.2	1.4	28.2
1500		.1	.2	.3	1.1	28.3
1800			.2	1.0	.9	27.9
2100				.7	.5	28.5
Av.			.2	.6	1.1	28.1
			May			
0300	0.1	.1	.3	.6	.3	29.6
0900			.2	.3	.7	29.5
1200			.1	.2	.2	30.5
1500				.3	.1	30.6
1800			.1	.2	.1	30.6
2100		.1		.2	.1	30.6
Av.			.1	.3	.3	30.3
			June			
0300					1.6	28.4
0900				.1	1.3	28.6
1200				.2	.7	29.1
1500			.1	.1	.8	29.0
1800					.4	29.6
2100				.1	.9	29.0
Av.				.1	1.0	28.9
			July			
0300	.2	.2	.2	1.6	1.1	27.7
0900			.4	1.0	1.9	27.7
1200		.1	.2	.3	2.3	28.1
1500		.2		.7	1.7	28.4
1800		.2		.4	2.0	28.4
2100		.3		.6	2.3	27.8
Av.		.2	.1	.8	1.9	28.0
			August			
0300	.2	.3	.3	1.0	3.4	25.8
0900	.1		.2	1.4	2.8	26.5
1200			.1	.7	2.0	28.2
1500				.7	2.1	28.2
1800			.2	.6	1.0	28.6
2100				.8	2.0	28.2
Av.	.1	.1	.1	.8	2.3	27.6

BIG DELTA

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			April			
0300				0.7	0.7	28.6
0900				.6	1.4	28.0
1200				.4	.4	29.2
1500				.3	.3	29.4
1800				.6	.2	29.2
2100			0.1	.3	.6	29.0
Av.				.5	.6	28.9
			May			
0300				.4	.1	30.5
0900				.3		30.7
1200				.2	.1	30.7
1500 1/				.1	.1	30.4
1800				.2		30.8
2100				.3	.1	30.5
Av.				.3	.1	30.6
			June			
0300		0.1			.4	29.5
0900				.2	.8	29.0
1200					.8	29.2
1500				.1	.8	29.1
1800					.3	29.7
2100	0.1				.2	29.7
Av.				.1	.5	29.4
			July			
0300	.1		.1	.7	1.6	28.5
0900				.4	.9	29.7
1200				.2	.9	29.9
1500			.1		.8	30.1
1800				.3	1.1	29.6
2100				.6	1.0	29.4
Av.				.4	1.1	29.5
			August			
0300	.1	.1		.2	.7	29.9
0900		.1	.1		1.7	29.1
1200				.1	.3	30.6
1500				.1	.7	30.2
1800			.1		.3	30.6
2100				.1	.5	30.1
Av.				.1	.5	30.1

FAIRBANKS

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			April			
0300		0.1			1.3	28.6
0900				0.1	1.2	28.7
1200				.1	.4	29.5
1500					.2	29.8
1800				.1	.2	29.7
2100				.1	.4	29.5
Av.				.1	.6	29.3
			May			
0300		.1	0.1	.4	.2	30.2
0900				.2	.4	30.4
1200					.4	30.6
1500					.3	30.7
1800					.4	30.6
2100					.2	30.8
Av.				.1	.3	30.6
			June			
0300				.1	.9	29.0
0900					.7	29.3
1200			.1		.3	29.6
1500				.1	.3	29.6
1800					.9	29.1
2100				.2	1.0	28.8
Av.				.1	.7	29.2
			July			
0300	0.4	.3	.4	.9	2.1	26.9
0900		.1	.2	.9	1.5	28.0
1200		.1	.3	.2	1.0	29.4
1500	.1	.1		.4	1.7	28.7
1800			.2	.2	1.3	29.3
2100			.2	.2	1.8	28.8
Av.	.1	.1	.2	.5	1.6	28.5
			August			
0300	.2	.4		1.3	2.1	26.9
0900		.1	.5	1.1	1.6	27.4
1200			.3	.3	1.3	29.1
1500			.1	.3	.9	29.7
1800			.1	.2	1.0	29.7
2100			.1	.3	.8	29.8
Av.		.1	.2	.6	1.3	28.8

FT. YUKON

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			April			
0300		0.2		0.9	0.6	27.3
0900				.6	.7	28.7
1200				.4	1.0	28.6
1500				.4	.7	28.9
1800 1/				.5	.6	27.9
2100 1/			0.1	.7	.9	27.3
Av.				.6	.8	28.1
			May			
0300				.3	.7	30.0
0900				.6	.7	28.7
1200				.1	.6	30.3
1500				.1	.3	30.6
1800 1/					.4	30.1
2100				.4	.7	29.9
Av.				.3	.6	29.9
			June			
0300				.1	.8	29.1
0900		.1			1.2	28.7
1200					.9	29.1
1500					1.0	29.0
1800					1.4	28.6
2100				.1	1.2	28.7
Av.					1.1	28.9
			July			
0300	0.1	.4	.3	.6	1.3	28.3
0900		.3	.3	.6	2.0	27.8
1200	.1	.2	.3	.7	1.6	28.1
1500	.1	.1	.2	.9	2.1	27.6
1800		.2	.2	.2	1.7	28.7
2100		.1	.6	.7	1.3	28.3
Av.	.1	.2	.3	.6	1.7	28.1
			August			
0300	.1	.2	.1	.6	1.6	28.4
0900		.1		.7	2.6	27.6
1200		.1	.1	.3	1.6	28.9
1500				.4	1.3	29.3
1800				.1	.6	30.3
2100	.1		.2	.2	1.4	29.1
Av.		.1	.1	.4	1.5	28.9

See footnote at end of table.

Table 30.--Visibility distance by hour of day, and number of days per month in each distance class--Continued

GALENA

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			Visibility in miles			
			April			
0300		0.1		0.6	1.4	27.9
0900			0.1	1.0	1.1	27.8
1200			.2	.6	.7	28.5
1500			.1	.2	.7	29.0
1800				.6	.4	29.0
2100				.8	.8	28.4
Av.			.1	.6	.9	28.4
			May			
0300	0.1			.4	.2	30.3
0900			.1	.2	.3	30.4
1200				.2	.1	30.7
1500			.1	.2		30.7
1800			.1	.2		30.7
2100				.3	.1	30.6
Av.			.1	.2	.1	30.6
			June			
0300		.1	.1	.6	.5	28.7
0900				.3	1.3	28.4
1200				.4	.9	28.7
1500			.1	.3	.7	28.9
1800			.2	.3	1.0	28.5
2100			.1	.2	.8	28.9
Av.			.1	.3	.9	28.7
			July			
0300		.4	.5	1.4	.9	27.9
0900		.6		1.1	1.6	27.7
1200		.5		1.0	.6	28.9
1500			.4	1.2	1.4	28.0
1800	.1		.4	.6	1.5	28.4
2100	.1	.4	.2	.8	1.6	27.9
Av.		.3	.3	1.0	1.3	28.1
			August			
0300	.1		.1	.1	1.6	29.1
0900			.1	.4	1.6	28.9
1200				.9	.8	29.3
1500				.5	.6	29.9
1800				.4	.2	30.4
2100				.4	1.2	29.4
Av.				.5	1.0	29.5

GULKANA

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			Visibility in miles			
			April			
0300				0.6	0.4	29.0
0900				.2	.2	29.6
1200				.4	.2	29.4
1500				.2		29.8
1800				.2	.1	29.7
2100				.2	.4	29.4
Av.				.3	.2	29.5
			May			
0300				.2	.1	30.7
0900			0.1	.1	.2	30.6
1200			.1	.1	.1	30.7
1500					.2	30.8
1800					.1	30.9
2100					.1	30.9
Av.				.1	.1	30.8
			June			
0300 1/	0.1	0.3			.6	27.0
0900					.1	29.9
1200						30.0
1500						30.0
1800						30.0
2100						30.0
Av.		.1			.1	29.5
			July			
0300	.1	.1	.1	.2	.6	29.9
0900				.1	.6	30.3
1200					.6	30.4
1500				.1	.4	30.5
1800				.1	.7	30.2
2100				.1	.8	30.1
Av.				.1	.6	30.2
			August			
0300	.2	.3	.1	.3	.3	29.8
0900			.1	.1	.3	30.5
1200				.1		30.9
1500				.1		30.9
1800					.1	30.9
2100					.2	30.8
Av.		.1		.1	.2	30.6

HOMER

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			Visibility in miles			
			April			
0300	0.1	0.1	0.2	1.0	1.1	27.5
0900		.1	.3	.6	1.2	27.5
1200			.1	.7	.7	28.5
1500				1.1	.9	28.0
1800				.4	.9	28.7
2100	.2	.1	.2	.7	.8	28.0
Av.	.1	.1	.1	.7	.9	28.1
			May			
0300	.1	.2	.1		.4	30.2
0900				.1	.4	30.5
1200				.1	.2	30.7
1500					.1	30.9
1800					.1	30.9
2100			.1			30.9
Av.					.2	30.7
			June			
0300	.2	.3	.1	.3	.2	28.9
0900				.3	.1	29.6
1200				.1	.3	29.6
1500					.1	29.9
1800					.2	29.8
2100				.1	.4	29.5
Av.		.1		.1	.2	29.6
			July			
0300	.6	.3		.2	1.2	28.7
0900			.1	.3	.6	30.0
1200					.4	30.6
1500				.3	.3	30.4
1800				.3	.5	30.1
2100	.1			.3	.8	29.8
Av.	.1	.1		.2	.7	29.9
			August			
0300	.6	.3	.6	.3	.8	28.4
0900	.1	.1	.1	.1	.7	29.9
1200			.1	.1	.3	30.5
1500				.3	.4	30.3
1800			.2	.1	.6	30.1
2100	.1	.1	.3	.2	.6	29.7
Av.	.1	.1	.2	.2	.6	29.8

ILIAMNA

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			Visibility in miles			
			April			
0300	0.2		0.2	0.9	2.1	26.6
0900	.1		.4	.7	1.3	27.4
1200	.1		.1	.8	.9	28.1
1500		0.1	.4	.6	1.1	27.8
1800		.1	.4	1.3	.8	27.4
2100	.1	.1	.4	1.2	1.2	27.0
Av.	.1	.1	.3	.9	1.2	27.4
			May			
0300	.1	.1	.1	.8	.7	29.2
0900				.2	.7	30.1
1200			.1	.2	.4	30.3
1500			.1	.1	.3	30.5
1800				.2	.1	30.7
2100				.2	.4	30.4
Av.			.1	.3	.4	30.2
			June			
0300	.3	.1	.2	.6	.6	28.2
0900		.1		.3	.8	28.8
1200				.1	.3	29.6
1500					.1	29.9
1800					.3	29.7
2100					.6	29.4
Av.	.1			.2	.4	29.3
			July			
0300	.2	.4	.8	1.7	2.2	25.7
0900		.1	.4	.9	2.0	27.6
1200			.1	.3	1.2	29.4
1500			.1	1.1	1.1	28.7
1800	.1			.4	1.0	29.5
2100	.1		.1	.7	.8	29.3
Av.	.1	.1	.2	.8	1.4	28.4
			August			
0300	.1	.2	.3	1.8	3.1	25.5
0900				1.3	1.9	27.8
1200		.1		.9	1.2	28.8
1500		.1	.1	1.1	1.9	27.8
1800		.1	.3	.9	1.4	28.3
2100		.1	.3	1.4	1.4	27.8
Av.		.1	.2	1.2	1.8	27.7

KOTZEBUE

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			Visibility in miles			
			April			
0300	0.1	0.3	0.7	1.2	2.9	24.8
0900	.2	.2	1.1	1.4	1.8	25.3
1200	.2	.2	.7	1.8	1.4	25.7
1500		.4	.9	1.4	1.4	25.9
1800		.3	.4	1.1	1.6	26.6
2100		.3	.6	1.7	1.8	25.6
Av.	.1	.3	.7	1.4	1.8	25.7
			May			
0300	.4	.4	.5	.9	1.0	27.5
0900	.1	.2	.4	1.4	1.3	27.6
1200	.1	.1	.1	1.2	1.0	28.5
1500			.3	.2	.7	29.8
1800		.2	.2	.4	.4	29.8
2100	.1	.2	.4	.8	.4	29.1
Av.	.1	.2	.4	.8	.8	28.7
			June			
0300	.7	.1	.4	1.1	.6	27.1
0900	.1	.1	.4	1.6	.7	27.1
1200	.1		.3	1.2	.6	27.8
1500	.1	.2	.3	.9	.4	28.1
1800	.4	.1	.6	.6	.3	28.0
2100	.2	.6	.8	.6	.7	27.1
Av.	.3	.2	.5	1.0	.5	27.5
			July			
0300	.4	.2	.3	1.3	1.2	27.6
0900	.2		.7	.8	1.2	28.1
1200			.2	1.0	.8	29.0
1500			.1	.7	.9	29.3
1800	.1	.1	.2	.3	1.1	29.2
2100	.2	.1	.1	.8	.7	29.1
Av.	.1	.1	.3	.8	1.0	28.7
			August			
0300	.2	.1	.3	.8	2.2	27.4
0900			.2	1.0	2.0	27.8
1200			.1	.4	2.9	27.6
1500			.2	.4	1.9	28.5
1800			.4	.6	1.4	28.6
2100			.1	.9	1.2	28.8
Av.			.2	.7	1.9	28.2

LAKE MINCHUMINA

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
			Visibility in miles			
			April			
0300		0.1	0.1	0.4	0.9	28.5
0900				.2	.9	28.9
1200				.2	.7	29.1
1500			.1		.6	29.3
1800				.2	.4	29.4
2100				.1	.9	29.0
Av.				.2	.7	29.1
			May			
0300	0.2	.1	.1	.2	.6	29.8
0900					.4	30.6
1200				.1	.1	30.8
1500				.1	.2	30.7
1800					.3	30.7
2100					.4	30.6
Av.				.1	.3	30.6
			June			
0300					.7	29.3
0900				.2	.9	28.9
1200				.1	.2	29.7
1500					.6	29.4
1800					.2	29.8
2100					.5	29.5
Av.				.1	.5	29.4
			July			
0300	.4	.1	.1	.3	2.1	28.0
0900			.2	.1	1.6	29.1
1200			.1	.1	1.0	29.8
1500				.2	.7	30.1
1800				.3	.7	30.0
2100			.1	.2	.7	30.0
Av.	.1		.1	.2	1.1	29.5
			August			
0300	.1		.2	.6	.6	29.5
0900			.1	.1	.4	30.4
1200			.1	.2	.6	30.1
1500				.1	.1	30.8
1800				.2	.7	30.1
2100					.7	30.3
Av.			.1	.2	.5	30.2

* See footnote at end of table.

Table 30.--Visibility distance by hour of day, and number of days per month in each distance class--Continued

([illegible])

McGRATH

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
April						
0300			0.1	0.5	0.6	28.3
0900			.1	.8	1.1	29.0
1200			.1	.6	1.1	28.2
1500			.2	.6	1.0	28.2
1800			.1	.3	.8	28.6
2100			.2	.4	1.3	28.1
Av.			.1	.6	1.0	28.3
May						
0300	0.1	0.1		.1	.7	30.0
0900	.1	.1		.1	.7	30.0
1200			.1		.7	30.2
1500					.3	30.7
1800					.2	30.8
2100				.1	.2	30.7
Av.				.1	.5	30.4
June						
0300		.1	.1	.3	1.0	28.5
0900					1.4	28.6
1200					.9	29.1
1500					.6	29.4
1800					.8	29.2
2100				.2	.8	29.0
Av.				.1	.9	29.0
July						
0300	.1	.3	.2	1.0	1.9	27.5
0900			.2	1.0	1.1	28.7
1200			.3	.4	1.2	29.1
1500			.3	.3	1.4	29.0
1800			.3	.4	1.3	29.0
2100		.1	.2	.7	.6	29.4
Av.		.1	.3	.6	1.2	28.8
August						
0300		.1	.2	1.1	2.4	27.2
0900			.1	.9	2.1	27.9
1200				.1	1.7	29.2
1500				.2	1.3	29.5
1800				.3	1.7	29.0
2100				.9	1.6	28.5
Av.			.1	.6	1.8	28.5

NAKNEK

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
April						
0300	0.2	0.2	0.4	1.1	2.6	26.3
0900		.1	.2	1.2	2.2	26.3
1200			.3	.6	1.8	27.1
1500			.2	1.4	1.2	27.2
1800			.4	1.2	.6	27.6
2100		.1	.3	1.1	1.4	27.1
Av.		.1	.3	1.1	1.7	26.8
May						
0300	.6	.7	.6	.7	2.0	26.4
0900				.3	1.0	29.7
1200				.3	.9	29.8
1500					.6	30.4
1800	.1				.4	30.5
2100	.1			.4	.5	29.7
Av.	.1	.1	.1	.3	1.0	29.4
June						
0300	.9	.8	.9	1.6	2.8	23.0
0900				.3	1.4	28.3
1200				.1	1.0	28.9
1500				.2	1.0	28.6
1800				.2	.9	28.9
2100				.6	1.3	28.1
Av.	.1	.1	.2	.5	1.4	27.7
July						
0300	1.6	1.6	1.2	2.3	3.4	20.9
0900				.8	3.0	27.2
1200				.3	1.9	28.8
1500				.4	1.2	29.4
1800				.4	1.6	29.0
2100			.1	1.3	1.8	27.8
Av.	.3	.3	.2	.9	2.1	27.2
August						
0300	.8	1.0	1.3	2.2	4.8	20.9
0900			.1	2.0	3.7	25.2
1200				1.3	1.9	27.8
1500				1.3	2.2	27.5
1800			.3	.8	2.1	27.8
2100		.1	.3	1.3	2.6	26.7
Av.	.1	.2	.3	1.5	2.9	26.0

NORTHWAY

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
April						
0300	0.1	0.1	0.1	0.7	0.7	28.3
0900			.3	.8	.3	28.6
1200		.1	.1	.7	.3	28.8
1500				.7	.3	29.0
1800	.1		.1	.3	.3	29.2
2100			.2	.2	.9	28.7
Av.			.1	.6	.5	28.5
May						
0300	.1	.1		.6	1.0	29.2
0900			.1	.1	1.2	29.6
1200				.1	.3	30.6
1500				.2		30.8
1800				.1		30.9
2100					.4	30.6
Av.				.2	.5	30.3
June						
0300	.2	.1		.1	.6	28.6
0900				.1	.6	29.3
1200					.6	29.4
1500		.1		.1	.4	29.4
1800					.7	29.3
2100				.1	.7	29.2
Av.				.1	.6	29.3
July						
0300		.1	.2	.7	.9	29.1
0900				.4	1.3	29.3
1200			.1	.4	.9	29.6
1500				.6	.6	29.8
1800				.3	.6	30.1
2100				.4	.8	29.8
Av.			.1	.5	.8	29.6
August						
0300	.4	.2	.6	.4	.8	28.7
0900				.2	1.4	29.4
1200				.2	.6	30.2
1500					.8	30.2
1800				.1	.5	30.4
2100					.8	30.2
Av.	.1		.1	.2	.6	29.8

SUMMIT

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
April						
0300			0.2	1.6	1.6	26.6
0900				.6	1.1	28.3
1200				.8	1.0	28.2
1500		0.1	.1	.9	1.1	27.8
1800			.2	.4	1.4	28.0
2100			.1	.3	[illegible]	[illegible]
Av.			.1	.8	1.4	27.7
May						
0300	0.1	.1	.6	1.4	1.4	27.4
0900			.1	.8	1.0	29.1
1200			.1	.7	.7	29.5
1500				.9	.3	29.8
1800			.2	.4	.8	29.6
2100			.3	.3	1.1	29.3
Av.			.2	.8	.9	29.1
June						
0300		.2		.9	.6	28.3
0900			.1		.3	29.6
1200			.1		.1	29.8
1500					.4	29.6
1800					.6	29.4
2100				.2	.7	29.1
Av.				.2	.5	29.3
July						
0300	.1	.9	.6	1.3	2.9	25.2
0900				.1	1.1	29.8
1200					.9	30.1
1500				.1	.7	30.2
1800				.2	1.3	29.5
2100		.1		.4	1.6	28.9
Av.		.2	.1	.4	1.4	28.9
August						
0300	.2		.7	1.2	2.1	26.8
0900			.1	.2	1.1	29.6
1200	.1			.2	.9	29.8
1500					1.1	29.9
1800			.1	.2	1.1	29.6
2100				.6	2.2	28.2
Av.	.1		.1	.4	1.4	29.0

TANANA

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
April						
0300				0.3	1.1	28.6
0900			0.1	.3	.5	28.8
1200			.1	.2	1.0	28.7
1500				.1	1.0	27.9
1800					.4	29.6
2100				[illegible]	[illegible]	[illegible]
Av.				.2	.5	29.0
May						
0300	0.1		.1	.3	.4	30.1
0900				.1	.8	30.1
1200					.7	30.3
1500				.1	.2	30.7
1800				.1	.3	30.6
2100				.1	.3	30.6
Av.				.1	.5	30.4
June						
0300			.1	.2	1.4	28.3
0900			.1	.1	1.7	28.1
1200				.2	1.2	28.6
1500				.4	.7	28.9
1800			.1	.1	.9	28.9
2100			.1	.1	.8	29.0
Av.			.1	.2	1.1	28.6
July						
0300	.1		.1	1.2	1.3	28.3
0900			.4	.9	2.2	27.5
1200			.4	.7	2.1	27.8
1500			.3	.9	.9	28.9
1800			.3	.6	1.7	28.4
2100			.2	.6	1.6	28.6
Av.			.3	.8	1.6	28.3
August						
0300	.2	0.1	.3	.8	1.9	27.7
0900		.1	.2	.7	2.6	27.4
1200			.1	.6	1.4	28.9
1500				.2	1.4	29.4
1800					.3	30.7
2100				.1	1.3	29.6
Av.			.1	.4	1.5	29.0

UNALAKLEET

Time of day	0-1/8	3/16-3/8	1/2-3/4	1-2-1/2	3-6	7+
April						
0300	0.1	0.4	0.4	1.1	0.9	27.1
0900	.1	.3	.1	1.0	1.2	27.3
1200	.1	.1	.3	.6	.6	28.3
1500			.2	.6	.9	28.3
1800	.1	.1	.1	1.0	.3	28.3
2100		[illegible]	.4	[illegible]	[illegible]	[illegible]
Av.	.1	.2	.2	.8	.8	27.9
May						
0300		.2	.5	1.0	1.0	28.2
0900		.2	.1	1.3	1.0	28.4
1200			.1	.4	.5	29.9
1500		.2		.8	.3	29.7
1800	.3	.2	.2	.1	.5	29.6
2100	.3	.2	.4	.4	.1	29.6
Av.	.1	.2	.2	.7	.6	29.2
June						
0300	.2	.3	.3	1.0	1.0	27.2
0900	.1	.1	.1	.8	.7	28.2
1200	.1		.3	.9	.6	28.1
1500	.1	.1	.2	.3	.7	28.6
1800		.1	.2	.9	.1	28.7
2100	.2	.1	.2	.7	.7	28.1
Av.	.1	.1	.2	.8	.6	28.2
July						
0300			.1	.9	.3	29.7
0900				.8	1.5	28.6
1200				.8	1.4	28.8
1500	.1		.1	.6	.9	29.3
1800	.2		.1	.6	.6	29.5
2100			.2	.7	.3	29.8
Av.	.1		.1	.7	.6	29.3
August						
0300			.3	1.1	1.4	28.2
0900		.1		1.6	1.3	28.0
1200				.8	1.0	29.2
1500	.1		.1	.6	1.2	29.0
1800			.1	.9	1.3	28.7
2100		.1	.2	1.3	1.0	28.4
Av.			.1	1.1	1.2	28.6

1/ Minor data discrepancy

Source: United States Weather Bureau coded data.

Table 31.--Height of ceiling by hour of day, and number of days per month in each height class

(Av. 1950-58)

ANCHORAGE

Time of day	Ceiling in hundreds of feet: 0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
April										
0300		0.1		0.4	1.1	0.9	2.3	6.7	3.5	14.7
0900			0.2	.8	.3	.5	1.3	7.1	3.7	15.8
1200				.3	1.1	.4	1.7	8.4	2.7	15.5
1500				.6	.3	1.3	2.4	8.1	2.7	14.6
1800				.6	.9	1.1	2.0	8.6	2.6	14.0
2100				.2	1.3	.8	2.3	8.9	2.9	13.6
Av.		.0	.0	.5	.8	.9	2.0	8.0	3.1	14.7
May										
0300			.1	.1	.7	.7	2.9	13.2	2.7	10.6
0900			.1		1.0	.7	3.4	10.3	2.9	12.6
1200					.6	.4	3.7	10.3	4.1	11.9
1500					.4	.9	3.8	11.6	3.0	11.3
1800					.4	.6	3.3	13.2	2.9	10.6
2100					.7	.7	3.0	11.7	3.8	11.1
Av.			.0	.0	.6	.7	3.4	11.7	3.2	11.4
June										
0300			.1	.8	.9	.9	3.0	8.6	3.8	9.9
0900				.2	2.2	1.9	3.1	7.7	4.4	10.5
1200				.2	.7	1.6	3.4	8.4	3.9	11.8
1500					.3	.7	2.6	10.2	3.4	12.8
1800				.2	.3	.8	2.4	9.0	4.6	12.7
2100				.2	.4	1.0	2.8	9.4	4.7	11.5
Av.			.0	.3	.8	1.2	3.2	8.9	4.1	11.5
July										
0300			.1	.4	1.8	1.6	4.4	10.8	1.4	10.5
0900				1.4	2.7	1.7	2.1	8.6	2.3	12.2
1200				.7	2.0	1.2	2.4	8.2	3.7	12.8
1500				.4	1.2	.9	3.2	8.9	3.3	13.1
1800				.3	.9	.9	3.4	10.7	2.6	12.2
2100			.1	.4	.7	1.3	3.7	10.0	2.8	12.0
Av.			.0	.6	1.6	1.3	3.2	9.5	2.7	12.1
August										
0300		.3	.2	.2	1.1	1.0	4.3	13.6	1.9	8.4
0900		.1	.2	1.0	1.6	1.0	3.6	11.4	2.7	9.4
1200				.7	.9	.9	3.2	10.9	4.1	10.3
1500				.2	.8	.7	3.3	11.6	3.2	11.2
1800				.6	.6	.4	4.2	10.8	3.7	10.7
2100		.1	.1		1.0	.9	4.8	11.7	2.4	10.0
Av.		.1	.1	.4	1.0	.8	3.9	11.7	3.0	10.0

BETHEL

Time of day	Ceiling in hundreds of feet: 0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
April										
0300		0.2	0.2	2.7	3.4	3.1	3.2	2.7	1.8	14.0
0900		.3	.2	3.8	1.3	1.8	[illegible]	[illegible]	1.9	12.7
1200			.2	[illegible]	[illegible]	[illegible]	1.7	7.6	1.2	12.2
1500		.1	.2	[illegible]	[illegible]	2.3	3.1	3.8	2.7	12.8
1800		.2	.2	3.0	1.1	1.8	[illegible]	2.7	2.6	13.2
2100		.1	.7	3.3	1.1	2.3	4.5	2.8	1.7	13.5
Av.		.2	.4	2.8	2.8	2.2	[illegible]	3.0	[illegible]	13.1
May										
0300	0.1	.4	.4	1.9	3.3	1.8	5.8	6.3	1.9	9.1
0900			.2	4.9	3.1	[illegible]	2.8	6.3	3.2	9.7
1200				1.3	4.3	4.2	6.1	4.7	1.9	8.5
1500				.8	4.3	3.9	7.9	[illegible]	1.7	9.5
1800			.1	.7	3.8	3.0	6.7	5.9	1.2	10.7
2100				.9	3.0	2.7	5.1	5.6	1.4	12.1
Av.	.0	.1	.1	1.8	3.5	2.7	5.7	5.7	1.9	9.9
June										
0300		.8	1.1	3.0	2.4	3.0	5.1	4.9	1.4	8.2
0900			.1	4.6	6.4	2.9	3.1	5.1	1.7	6.1
1200			.2	1.8	6.4	4.3	4.6	4.0	1.6	7.1
1500				.6	4.7	4.9	5.9	4.3	1.4	8.0
1800				1.1	3.0	4.6	6.7	4.2	2.1	8.3
2100				1.1	2.7	3.5	5.2	5.1	1.9	10.4
Av.		.1	.2	2.1	4.3	3.9	5.1	4.6	1.7	8.0
July										
0300	.1	.1	.9	5.8	5.2	1.9	5.0	4.9	1.1	6.0
0900			1.2	8.3	4.9	1.8	2.6	4.0	1.9	5.5
1200			.2	5.0	6.8	4.6	3.2	4.2	1.4	6.6
1500				3.2	7.1	4.3	4.2	4.3	1.6	6.3
1800			.1	3.3	5.0	3.9	4.9	3.8	2.4	7.6
2100			.6	3.4	3.9	2.6	4.3	5.6	1.9	8.7
Av.	.0	.0	.5	4.8	5.5	3.2	4.0	4.6	1.7	6.7
August										
0300		1.0	1.4	5.0	4.6	4.6	5.2	3.6	1.2	4.4
0900		.3	1.2	9.7	6.6	2.7	3.2	3.7	.8	2.8
1200			.4	6.3	8.3	4.2	3.9	3.8	.7	3.4
1500			.1	5.1	6.6	6.4	4.3	3.8	1.3	3.2
1800			.6	4.6	5.3	3.9	5.4	4.7	1.2	5.3
2100			.8	5.5	5.4	3.7	3.8	4.8	1.4	5.6
Av.		.2	.8	6.0	6.2	4.2	4.3	4.1	1.1	4.1

BETTLES

Time of day	Ceiling in hundreds of feet: 0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
April										
0300				0.2	1.0	1.3	1.8	6.9	2.0	16.8
0900				.3	.7	.8	1.9	5.7	2.7	17.9
1200				[illegible]	.8	.7	1.7	5.0	3.1	18.7
1500				.2	.6	1.0	2.4	4.3	2.4	19.1
1800				.1	.7	1.0	1.3	4.7	2.2	20.0
2100				.1	.3	.8	1.3	5.7	3.1	18.7
Av.				.2	.7	.9	1.7	5.4	2.6	18.5
May										
0300			0.1	.2	.4	.7	2.0	10.6	1.7	15.3
0900				.1	.7	1.2	2.3	6.8	1.9	18.0
1200		0.1		.1	.4	.8	3.8	7.4	2.7	15.7
1500				.2	.4	.4	2.9	10.1	3.2	13.8
1800					.3	.8	1.9	9.7	3.2	15.1
2100					.8	.2	1.5	9.1	3.6	15.8
Av.		.0	.0	.1	.5	.7	2.4	9.0	2.7	15.6
June										
0300					.3	.7	1.1	10.3	1.8	15.8
0900				.2	.7	1.2	2.3	8.0	2.6	14.9
1200					1.0	.6	3.2	9.3	2.0	13.9
1500				.2	.3	1.0	3.4	8.0	2.3	14.8
1800					.6	1.0	1.7	8.2	3.2	15.2
2100				.1	.3	.3	.9	9.5	2.6	16.3
Av.				.1	.5	.8	2.1	8.9	2.4	15.2
July										
0300				.6	1.0	1.1	3.0	9.3	1.8	14.2
0900				.3	2.4	1.6	3.1	7.3	2.7	13.6
1200				.3	1.9	1.3	4.7	8.0	2.2	12.6
1500				.1	1.3	.4	4.7	9.1	1.8	13.6
1800				.1	.8	1.3	2.4	9.4	1.3	15.7
2100				.1	.9	1.1	2.3	9.0	1.6	16.0
Av.				.2	1.4	1.1	3.4	8.7	1.9	14.3
August										
0300		.2		1.3	1.4	1.3	4.4	12.0	1.3	9.1
0900		.1		1.6	3.3	2.2	4.7	8.1	2.2	9.2
1200				.8	2.2	3.0	4.8	7.9	3.6	8.7
1500				.4	1.1	3.1	3.7	10.3	2.3	10.1
1800				.2	1.6	1.8	3.2	10.3	1.9	12.0
2100				.1	1.1	2.1	3.0	10.8	2.0	11.9
Av.		.1		.7	1.8	2.2	3.9	9.9	2.2	10.2

BIG DELTA

Time of day	Ceiling in hundreds of feet: 0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
April										
0300				0.2	0.8	[illegible]	2.2	3.8	4.8	17.6
0900				.3	1.6	.9	1.4	2.4	3.7	19.7
1200					1.1	1.1	1.5	2.9	[illegible]	19.6
1500					.7	1.2	3.0	2.1	4.0	19.0
1800					.3	.8	1.4	[illegible]	4.2	[illegible]
2100				.2	.4	.6	1.8	[illegible]	3.7	[illegible]
Av.				.1	.9	.9	2.0	3.1	4.0	19.0
May										
0300				.2	.5	.8	2.7	5.7	[illegible]	15.6
0900				.4	.9	1.0	2.4	3.1	4.2	19.0
1200				.1	1.0	.8	4.1	5.0	[illegible]	16.1
1500				.1	.7	.7	3.7	5.8	4.4	15.6
1800				.1	.8	.6	1.7	5.9	5.9	15.1
2100				.2	.7	.7	[illegible]	[illegible]	4.4	15.8
Av.				.2	.8	.8	2.8	[illegible]	4.7	16.4
June										
0300				[illegible]	.7	.8	[illegible]	7.7	4.3	14.4
0900				.2	1.3	1.2	2.2	5.3	[illegible]	15.5
1200				.1	.9	1.3	3.2	4.7	[illegible]	16.0
1500				.3	[illegible]	1.1	2.7	7.3	4.6	13.8
1800				.1		.8	[illegible]	5.4	[illegible]	15.6
2100					.4	.8	2.7	7.1	4.4	14.6
Av.				.2	.6	1.0	[illegible]	6.2	4.4	15.
July										
0300			.1	.8	1.7	.7	3.7	7.8	.7	12.5
0900				1.1	2.0	.9	2.0	4.7	5.0	14.4
1200				.4	1.3	.3	1.8	5.6	5.1	15.4
1500				.1	1.6	.9	3.1	[illegible]	5.0	15.6
1800				.7	.8	[illegible]	2.2	6.9	[illegible]	16.2
2100				.1	.1	1.2	3.0	8.0	3.8	14.5
Av.			.0	.5	1.4	.8	2.6	[illegible]	4.5	14.8
August										
0300			.1	.7	[illegible]	[illegible]	5.1	7.4	[illegible]	[illegible]
0900				1.4	[illegible]	.9	1.2	5.4	4.8	11.4
1200				.9	2.0	.9	[illegible]	4.4	4.7	[illegible]
1500				.6	.8	[illegible]	[illegible]	5.1	5.9	15.6
1800				.1	[illegible]	1.0	1.4	9.1	[illegible]	13.5
2100				.2	[illegible]	1.3	[illegible]	8.4	4.9	12.3
Av.			.0	.7	1.4	1.1	[illegible]	6.5	4.8	14.0

Table 31.--Height of ceiling by hour of day and number of days per month in each height class--Continued

(Av. 1950-58)

FAIRBANKS

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						April				
0300			0.1		0.6	1.4	1.6	5.3	3.4	17.6
0900					.7	1.7	1.6	3.9	3.2	18.9
1200					.6	[illegible]	2.1	3.3	2.3	20.7
1500					.2	.7	1.4	3.8	4.2	19.7
1800					.2	[illegible]	1.6	5.3	4.0	18.3
2100					.2	[illegible]	1.4	4.6	3.7	19.2
Av.			.0		.4	[illegible]	1.6	4.4	3.5	19.1
						May				
0300	0.1	0.2		0.2	.2	[illegible]	2.3	7.2	3.2	16.7
0900				.1	1.4	[illegible]	2.8	6.6	2.3	16.9
1200					.4	[illegible]	3.1	9.9	2.7	13.7
1500					.3	[illegible]	2.1	11.0	4.0	12.8
1800					.3	[illegible]	1.8	9.4	4.4	14.5
2100					.2	[illegible]	1.3	7.6	3.4	17.7
Av.	.0	.0		.1	.5	[illegible]	2.2	8.6	3.3	15.4
						June				
0300			.1	.1	.6	[illegible]	1.1	9.2	5.1	13.5
0900				.1	1.0	[illegible]	2.4	5.7	5.3	14.2
1200					.1	[illegible]	3.2	8.0	3.8	14.0
1500					.2	[illegible]	3.4	9.5	3.8	12.9
1800					.1	[illegible]	1.9	8.5	5.3	14.0
2100					.3	.4	.6	8.2	5.6	14.9
Av.			.0	.0	.4	[illegible]	2.1	8.2	4.8	13.9
						July				
0300	.1	.2	.3	.2	1.6	.7	1.6	8.8	4.2	13.3
0900				.6	2.9	1.8	1.3	5.8	3.6	15.0
1200		.1		.1	1.6	2.7	3.6	6.9	2.9	13.7
1500		.1		.1	.9	[illegible]	4.0	7.9	3.0	14.0
1800				.1	.9	[illegible]	2.0	7.6	4.4	15.0
2100				.3	.8	[illegible]	1.9	7.8	4.9	15.0
Av.	.0	.1	.1	.2	1.4	[illegible]	2.4	7.5	3.8	14.3
						August				
0300		.7	.3	.9	1.3	1.1	3.0	8.9	4.1	10.7
0900		.1		.9	4.2	[illegible]	2.0	7.0	4.2	11.6
1200				.2	1.2	1.9	2.9	7.8	3.6	13.4
1500				.2	1.3	[illegible]	2.4	9.8	2.7	13.4
1800			.1		.8	[illegible]	3.3	9.7	3.2	13.1
2100				.2	1.1	.6	2.7	11.2	3.1	12.1
Av.		.1	.1	.4	1.6	1.1	2.7	9.1	3.5	12.4

FT. YUKON

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						April				
0300				0.2	1.0	0.8	0.2	[illegible]	[illegible]	[illegible]
0900				.6	.6	.9	1.2	[illegible]	[illegible]	[illegible]
1200				.6	.8	1.3	.8	2.6	1.9	22.0
1500					.7	1.6	1.2	3.6	3.1	19.8
1800				.2	.6	1.0	.9	3.5	2.2	20.6
2100				.6	.7	1.1	.6	4.8	1.7	19.8
Av.				.4	.7	1.1	.8	4.2	2.0	20.3
						May				
0200				.3	.7	1.0	.8	6.8	1.0	20.4
0900				.3	1.0	1.3	1.4	4.6	2.4	20.0
1200				.6	.6	1.6	1.9	5.5	1.9	18.9
1500				.3	.2	1.0	2.4	5.6	1.6	19.9
1800				.4	.5	.9	1.6	5.5	1.5	20.1
2100				.4	.9	[illegible]	.9	6.1	2.1	20.4
Av.				.4	.6	1.0	1.5	5.7	1.8	20.0
						June				
0200					.7	.9	.4	7.0	1.4	19.6
0900				.6	1.0	.7	1.0	5.0	2.9	18.8
1200				.3	.6	1.2	1.9	4.6	2.3	19.0
1500				.1	.6	1.3	2.3	5.0	1.3	19.4
1800				.1	.8	1.2	2.6	5.5	.8	19.0
2100				.4	.3	.8	1.1	6.6	1.8	19.0
Av.				.2	.7	1.0	1.6	5.6	1.8	19.1
						July				
0300		0.1		.2	.8	1.2	.8	8.0	1.4	16.5
0900				.3	2.0	1.3	1.2	5.4	2.9	17.9
1200				.2	2.6	1.3	3.2	3.1	2.3	16.3
1500				.1	1.6	1.6	3.6	6.5	1.8	15.8
1800				.4	1.1	1.0	2.6	6.6	2.4	16.9
2100				.2	.8	1.8	1.2	9.1	2.0	15.9
Av.		.0		.2	1.5	1.5	2.1	6.4	2.1	17.2
						August				
0200				.3	1.3	1.7	2.0	8.7	1.8	15.2
0900			0.1	.7	1.3	1.3	2.1	6.8	1.9	16.8
1200				.6	1.1	2.0	3.1	5.7	1.7	16.8
1500				.1	1.3	1.5	3.6	6.6	1.8	15.8
1800				.4	1.1	1.0	2.6	6.6	2.4	16.9
2100				.2	1.0	1.7	1.2	8.7	1.7	16.5
Av.			.0	.4	1.2	1.6	2.4	7.2	1.9	16.3

GALENA

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						April				
[illegible]				0.6	0.9	[illegible]	3.6	4.7	2.1	16.0
[illegible]				.2	1.1	1.7	3.3	5.3	1.9	16.5
[illegible]				.2	.8	[illegible]	3.7	4.3	1.9	17.1
[illegible]				.1	.4	2.1	4.7	4.2	2.1	16.4
[illegible]					.6	[illegible]	4.3	4.9	2.6	16.6
[illegible]				.1	.9	1.1	4.9	4.8	2.2	16.0
Av.				.2	.8	1.7	4.1	4.7	2.1	16.4
						May				
[illegible]					.4	.9	5.4	7.4	2.7	14.3
[illegible]				.4	.4	[illegible]	2.8	7.4	2.3	15.9
[illegible]				.1	.6	2.3	4.9	7.3	2.3	13.5
[illegible]					.4	[illegible]	7.1	8.3	2.2	11.7
[illegible]					.2	.7	4.8	9.9	3.7	11.7
[illegible]					.1	.6	4.7	8.0	2.6	14.8
Av.				.1	.4	[illegible]	5.0	8.0	2.6	13.6
						June				
[illegible]				.2	.4	.6	3.3	8.8	3.0	13.7
[illegible]				.2	.7	1.3	3.0	6.0	4.2	14.6
[illegible]					.9	1.1	5.3	7.9	2.4	12.4
[illegible]					.7	1.0	7.2	7.3	3.2	10.6
[illegible]					.3	.6	5.6	8.8	3.4	11.3
[illegible]					.1	.3	4.8	8.6	3.3	12.9
Av.				.1	.5	[illegible]	4.9	7.9	3.2	12.6
						July				
[illegible]				.4	1.8	2.5	4.2	7.6	3.9	10.6
[illegible]			0.1	.9	3.0	[illegible]	3.5	6.6	3.2	11.6
[illegible]			.1	.2	2.5	4.1	5.7	5.1	2.6	10.7
[illegible]				.4	2.2	3.4	6.5	6.8	2.0	9.7
[illegible]				.6	1.0	1.9	6.1	7.4	3.8	10.2
[illegible]				.5	1.5	[illegible]	5.9	7.2	2.9	12.0
Av.			.0	.5	2.0	2.5	5.3	6.8	3.1	10.8
						August				
[illegible]		0.1	.1	.5	2.9	3.4	8.4	6.4	2.5	6.7
[illegible]				.6	3.4	5.9	6.1	6.2	2.0	6.8
[illegible]				.5	3.5	[illegible]	10.1	4.5	1.4	5.9
[illegible]				.1	3.1	4.4	11.8	5.0	1.4	5.2
[illegible]				.4	1.9	3.4	8.6	7.0	2.0	7.7
[illegible]				.4	2.4	[illegible]	8.5	8.6	1.4	7.7
Av.		.0	.0	.4	2.9	[illegible]	8.9	6.3	1.8	6.7

GULKANA

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						April				
0300				0.3	0.6	0.2	1.0	4.0	3.4	20.5
0900				.3	.4	.2	1.0	3.0	5.1	20.0
1200				.2	.3	.4	1.9	4.3	4.6	18.3
1500				.1	.3	.7	1.6	6.1	5.3	15.9
1800				.1	.1	.8	3.2	4.1	4.6	17.1
2100					.8	.2	2.1	3.7	3.4	19.8
Av.				.2	.4	.4	1.8	4.2	4.4	18.6
						May				
0300				.1	.3	.8	3.0	6.8	3.7	16.3
0900			0.1	.3	.8	.4	1.9	7.1	5.2	15.2
1200				.3	.4	.4	3.4	12.1	3.6	10.8
1500					.7	.8	3.6	12.1	3.3	10.5
1800					.3	.9	2.3	10.1	4.1	13.3
2100					.3	.4	3.3	7.8	3.8	15.4
Av.			.0	.1	.5	.6	2.9	9.3	4.0	13.6
						June				
0300	0.2	0.1			.6	.1	2.0	7.4	3.9	15.7
0900				.2	.7	.4	1.4	5.9	5.2	16.2
1200					.6	.3	2.2	9.2	3.8	13.9
1500					.3	1.0	3.3	9.1	3.6	12.7
1800					.3	.1	2.2	9.0	3.8	14.6
2100					.2	.4	2.0	8.3	3.0	16.1
Av.	.0	.0		.0	.4	.4	2.2	8.2	3.9	14.9
						July				
0300		.1	.1	.2	.3	.7	4.0	9.0	3.1	13.5
0900				.3	.9	1.3	2.1	6.8	5.1	14.5
1200				.2	.6	.4	2.9	9.7	3.7	13.5
1500				.2	.3	.6	2.9	9.6	3.6	13.8
1800				.1	.2	.3	2.4	10.5	4.3	13.2
2100				.3	.1	.7	2.6	10.3	2.2	14.8
Av.		.0	.0	.2	.4	.7	2.8	9.3	3.7	13.9
						August				
0300	.1	.3	.2	.1	.4	1.1	3.1	9.2	4.4	12.1
0900			.1	.3	1.1	.9	1.7	8.4	5.6	12.9
1200				.3	1.0	.3	2.3	8.7	5.0	13.4
1500				.2	.8	.4	2.7	8.3	4.8	13.8
1800				.2	.7	.4	3.2	9.1	4.0	13.4
2100			.1	.1	.6	1.0	3.2	8.2	3.9	13.9
Av.	.0	.1	.1	.2	.8	.7	2.7	8.6	4.6	[illegible]

Table 31.--Height of ceiling by hour of day, and number of days per month in each height class--Continued

(Av. 1950-58)

HOMER

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						Ceiling in hundreds of feet				
April										
0300		0.2	0.1	0.4	2.3	2.9	6.9	3.4	0.8	13.0
0900			.2	.8	2.2	2.3	5.8	4.2	1.7	12.8
1200			.1	.4	2.0	1.9	6.6	4.6	1.1	13.3
1500			.1	.9	2.3	1.9	7.1	3.8	1.6	12.3
1800				.6	1.2	2.7	7.0	3.7	1.4	13.4
2100		.1	.1	.6	2.1	2.1	6.3	3.9	1.2	13.6
Av.		.1	.1	.6	2.0	2.3	6.6	3.9	1.3	13.1
May										
0300		.3		.2	.8	2.9	9.4	6.0	1.4	10.1
0900				.2	.9	1.6	9.0	6.7	2.6	10.0
1200					1.2	1.2	9.3	7.0	2.2	10.1
1500				.1	.6	2.7	10.1	6.1	2.0	9.4
1800					1.7	3.6	9.0	5.2	1.3	10.2
2100					1.0	3.1	8.8	4.3	1.7	11.1
Av.		.1		.1	1.0	2.5	9.3	5.9	1.9	10.2
June										
0300		.1	.2	.3	1.1	2.3	7.3	6.7	1.8	10.2
0900				.3	1.1	1.1	7.4	6.8	2.1	11.2
1200					.8	1.0	8.1	6.7	1.9	11.5
1500					.4	1.0	7.2	6.8	2.1	12.5
1800					.3	.4	9.3	5.8	2.8	11.4
2100			.1		.4	.7	9.0	6.1	1.9	11.8
Av.			.1	.1	.7	1.1	8.0	6.5	2.1	11.4
July										
0300	0.1	.4	.1	.3	1.6	1.3	7.7	5.9	1.8	11.8
0900					.3	1.0	8.6	5.9	1.9	13.3
1200					.3	1.0	7.8	7.0	1.7	13.2
1500			.2		.9	.8	6.7	7.1	1.6	13.7
1800			.1	.2	.8	1.3	7.0	6.8	1.8	13.0
2100		.1	.3	.1	.6	1.3	6.7	6.8	1.1	14.0
Av.	.0	.1	.1	.1	.8	1.1	7.4	6.6	1.6	13.2
August										
0300	.1	.2	.4	.1	1.3	.7	10.8	6.8	1.1	9.5
0900			.1	.2	1.2	1.6	9.7	7.2	1.9	9.1
1200				.1	.7	1.3	11.9	5.2	1.6	10.2
1500					.9	1.0	10.3	7.0	2.1	9.7
1800			.3		.7	.4	11.9	5.6	1.8	10.3
2100		.1	.1	.2	.7	.9	11.2	5.4	1.2	11.2
Av.	.0	.1	.1	.1	.9	1.0	11.0	6.2	1.6	10.0

ILIAMNA

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						Ceiling in hundreds of feet				
April										
0300	0.1	0.1	0.1	0.8	2.0	2.8	4.3	5.2	0.9	13.7
0900			.1	.8	3.0	2.2	4.9	5.3	1.0	12.7
1200				.6	2.6	1.6	4.8	4.2	1.2	15.0
1500		.1	.2	.6	2.0	1.9	3.9	5.1	1.2	15.0
1800			.1	1.1	2.1	1.8	4.2	5.0	1.2	14.5
2100		.3	.1	.9	2.0	1.3	5.1	4.9	.8	14.6
Av.	.0	.1	.1	.8	2.3	1.9	4.5	5.0	1.1	14.2
May										
0300	.2	.1	.1	.8	1.2	2.4	8.0	8.7	.9	8.6
0900				.7	2.0	2.2	6.2	7.4	1.9	10.6
1200				.9	.8	1.6	6.6	9.0	1.3	10.8
1500				.6	1.1	.7	6.8	7.7	1.9	12.2
1800				.3	.9	.8	7.4	8.1	1.8	11.7
2100				.2	1.4	2.3	7.4	8.3	1.2	10.2
Av.	.0	.0	.0	.6	1.2	1.7	7.1	8.2	1.5	10.7
June										
0300		.3	.1	1.4	1.3	1.7	6.9	7.8	1.2	9.3
0900			.2	1.1	2.6	1.9	5.8	7.7	1.0	9.7
1200				.6	1.4	1.7	7.1	7.7	1.3	10.2
1500					.4	1.2	7.5	7.9	1.8	11.2
1800				.1	.6	1.2	6.0	8.1	1.4	12.6
2100				.4	.8	1.0	6.8	9.1	1.0	10.9
Av.		.1	.1	.6	1.2	1.4	6.7	8.0	1.3	10.6
July										
0300	.2	.4	.7	2.0	2.0	1.7	8.7	5.7	1.2	9.4
0900		.2	.6	2.0	3.8	1.9	6.2	6.4	1.3	8.6
1200		.1		1.3	2.6	2.1	7.0	6.6	1.6	9.7
1500			.1	1.0	1.4	1.8	6.8	7.6	1.0	11.3
1800		.1	.1	.7	1.3	1.7	6.4	9.1	.8	10.8
2100				.8	1.7	.6	7.7	7.7	1.8	10.7
Av.	.0	.1	.2	1.3	2.1	1.6	7.1	7.2	1.3	10.1
August										
0300		.6	.8	1.9	3.6	2.0	8.1	5.3	1.1	7.6
0900			.2	3.2	3.4	2.1	6.9	7.7	1.2	6.3
1200			.2	1.1	2.9	2.3	7.9	8.6	1.9	6.1
1500			.1	1.2	2.0	2.0	7.7	7.9	1.6	8.5
1800			.3	1.0	1.9	1.4	7.9	8.0	1.9	8.6
2100		.1	.4	1.2	2.1	2.4	8.0	7.8	1.7	7.3
Av.		.1	.3	1.6	2.6	2.0	7.8	7.6	1.6	7.4

KOTZEBUE

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						Ceiling in hundreds of feet				
April										
0300		0.1	0.1	1.3	2.1	1.6	3.9	4.4	1.7	14.8
0900	0.1	.3	.4	1.4	1.6	1.2	3.7	4.9	1.0	15.4
1200	.1		.1	1.4	2.7	1.1	2.1	3.1	2.1	17.3
1500		.2		1.1	2.6	1.7	2.1	2.9	2.2	17.2
1800			.1	.9	2.1	2.0	2.2	3.9	1.9	16.9
2100			.1	1.3	2.1	2.2	2.5	4.2	1.6	16.0
Av.	.0	.1	.1	1.2	2.2	1.6	2.8	3.9	1.8	16.3
May										
0300	.1	.9	.8	1.8	1.7	1.8	2.8	5.3	1.4	14.4
0900		.1	.7	2.8	1.7	1.8	2.4	3.9	1.2	16.4
1200		.2	.3	2.1	1.7	1.3	1.8	4.6	1.9	17.1
1500			.3	1.1	2.5	1.0	1.4	4.4	2.4	17.9
1800		.2	.2	.8	1.8	1.4	2.1	4.0	2.3	18.2
2100		.6	.1	1.1	1.8	1.2	2.0	4.6	1.6	18.0
Av.	.0	.3	.4	1.6	1.9	1.4	2.1	4.5	1.8	17.0
June										
0300		.8	1.1	2.1	1.6	1.0	2.9	5.3	2.2	13.0
0900		.2	1.6	1.9	2.6	1.4	3.1	4.3	2.4	12.5
1200		.3	.4	2.0	1.8	1.6	2.7	3.7	2.9	14.6
1500		.4	.8	1.1	1.0	1.1	2.2	3.3	4.0	16.1
1800		.7	.7	.8	.2	1.4	3.0	4.2	3.8	15.2
2100		.8	.8	1.3	.8	.7	2.2	6.6	2.4	14.4
Av.		.5	.9	1.5	1.3	1.2	2.7	4.6	3.0	14.3
July										
0300	.1	.7	1.0	2.9	2.3	1.6	4.1	4.4	4.0	9.9
0900		1.1	.7	3.9	3.7	2.1	2.6	5.0	2.4	9.5
1200		.6	.7	2.4	3.4	2.2	3.1	3.8	3.2	11.6
1500		.3	.8	2.1	1.6	2.1	3.1	4.7	4.1	12.6
1800		.2	.7	1.7	1.1	1.9	3.8	6.0	3.3	12.3
2100		.2	.7	1.7	2.1	1.9	3.3	6.0	3.3	11.8
Av.	.0	.5	.8	2.4	2.4	2.0	3.3	4.9	3.4	11.3
August										
0300		.3	.7	3.4	4.2	3.9	5.2	5.4	1.6	6.3
0900		.1	.2	5.0	4.9	2.9	3.9	6.2	2.0	5.8
1200			.1	4.0	5.2	3.0	3.6	4.7	2.8	7.6
1500		.1	.1	2.3	4.3	3.9	3.9	5.7	2.7	8.0
1800		.2	.2	2.6	2.9	3.1	5.0	5.3	3.3	8.4
2100		.1	.1	3.1	1.9	4.0	5.7	6.9	2.0	7.2
Av.		.1	.2	3.4	3.9	3.5	4.6	5.7	2.4	7.2

LAKE MINCHUMINA

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
						Ceiling in hundreds of feet				
April										
0300		0.1		0.2	0.6	1.2	2.7	6.4	2.4	16.4
0900				.2	.7	1.7	1.7	4.8	2.4	18.5
1200				.1	.7	1.3	3.1	4.2	2.6	18.0
1500				.1	.1	1.4	4.3	4.3	3.1	16.7
1800				.1	.1	1.2	4.1	5.8	2.6	15.9
2100					.2	1.2	3.7	4.8	2.7	17.4
Av.		.0		.1	.4	1.3	3.3	5.0	2.7	17.2
May										
0300	0.1			.2	.7	.9	3.4	8.7	2.7	14.3
0900				.4	.7	1.0	3.0	6.8	2.7	16.4
1200					1.1	1.0	5.4	7.9	3.3	12.3
1500				.1	.6	.9	7.1	7.2	3.3	11.8
1800				.2	.2	.6	4.8	9.3	3.0	12.9
2100				.4	.4	.6	3.1	10.2	2.4	13.9
Av.	.0			.2	.6	.8	4.5	8.4	2.9	13.6
June										
0300				.3	.4	.7	4.4	8.8	2.7	12.7
0900				.4	1.4	1.1	4.1	6.9	3.8	12.3
1200				.1	1.0	1.0	5.0	7.9	3.1	11.9
1500				.1	.3	.7	6.3	9.9	2.7	10.4
1800				.1	.1	.8	5.8	10.6	3.2	9.4
2100					.2	.4	3.9	11.6	3.1	10.8
Av.				.2	.6	.8	4.9	9.3	3.0	11.2
July										
0300	.2	.2	0.1	1.3	1.2	1.4	5.4	7.5	2.0	11.7
0900				1.1	1.3	3.0	4.1	6.6	2.3	12.0
1200				.3	2.1	3.1	5.6	7.0	1.7	11.2
1500				.2	1.9	1.7	6.8	7.0	1.6	11.8
1800				.2	1.3	1.3	6.2	7.9	2.0	12.1
2100				.2	1.6	1.4	5.5	8.2	2.7	11.4
Av.	.0	.0	.0	.6	1.7	2.0	5.6	7.4	2.0	11.7
August										
0300	.1		.1	1.0	1.8	2.0	5.1	10.3	1.2	9.4
0900			.1	1.9	3.0	2.1	4.3	7.7	2.8	9.1
1200				.8	2.7	2.3	6.2	7.1	3.2	8.7
1500				.3	2.2	2.6	6.1	8.2	2.7	8.9
1800				.4	1.0	2.2	7.8	9.1	2.0	8.5
2100			.1	.2	1.2	2.3	6.3	10.0	2.4	8.7
Av.	.0		.1	.7	2.0	2.2	6.0	8.7	2.4	8.9

Table 31.--Height of ceiling by hour of day, and number of days per month in each height class--Continued

(Av. 1950-58)

McGRATH

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
					April					
0300		0.1		0.4	1.1	2.7	3.3	5.3	2.2	14.9
0900				.2	1.3	1.9	2.2	5.0	2.2	17.2
1200				.1	1.4	2.0	2.9	3.2	1.9	16.5
1500				.1	1.4	.9	4.0	3.6	2.2	17.8
1800				.1	1.0	1.3	2.8	5.2	2.0	17.6
2100				.3	1.0	2.0	2.9	5.0	1.7	17.1
Av.		.0		.2	1.2	1.8	3.0	4.6	2.0	17.2
					May					
0300			0.1	.6	1.2	1.4	3.3	8.2	3.7	12.5
0900				.4	1.7	2.0	2.3	7.2	2.8	14.6
1200				.1	1.0	1.6	4.3	9.0	2.9	12.1
1500					.8	.9	4.4	11.3	3.1	10.5
1800					.4	1.0	4.0	10.8	2.7	12.1
2100			.1		.6	.9	3.9	8.2	3.4	13.9
Av.			.0	.2	1.0	1.3	3.7	9.1	3.1	12.6
					June					
0300				.2	1.2	.4	2.2	10.8	4.4	10.8
0900				.1	1.6	2.4	3.6	7.2	3.7	11.4
1200					.6	1.3	6.1	9.4	2.0	10.6
1500					.2	1.0	5.0	11.2	2.8	9.8
1800					.2	.3	3.0	11.6	4.0	10.9
2100				.1	.4	.8	2.8	10.2	3.8	11.9
Av.				.1	.7	1.0	3.8	10.1	3.4	10.9
					July					
0300	0.1	.2	.1	.7	2.6	1.9	3.7	10.4	2.4	8.9
0900				.4	4.4	2.3	3.3	7.0	2.1	11.5
1200					3.2	3.4	4.4	7.6	2.1	10.3
1500					1.7	2.8	6.0	8.3	2.6	9.6
1800				.1	1.3	1.2	4.3	11.4	3.3	9.4
2100				.1	.9	1.6	4.4	11.1	2.2	10.7
Av.	.0	.0	.0	.2	2.4	2.2	4.4	9.3	2.4	10.1
					August					
0300		.1	.1	.9	3.9	2.7	5.3	8.2	2.9	6.9
0900		.1	.2	1.7	5.1	2.7	5.2	6.8	2.1	7.1
1200			.1	.4	3.6	3.7	7.6	6.3	1.9	7.2
1500			.1	.1	2.3	2.2	8.7	9.2	2.0	6.4
1800					2.7	1.6	5.7	10.3	2.8	7.9
2100				.6	2.2	2.1	5.8	10.5	2.1	7.7
Av.		.0	.1	.6	3.3	2.5	6.4	8.6	2.3	7.2

NAKNEK

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
					April					
0300	0.1	0.6	0.4	0.9	3.2	1.3	5.1	3.6	1.7	13.1
0900			.3	2.4	3.0	2.8	4.1	3.8	1.6	12.0
1200				1.8	4.8	3.6	3.1	3.3	2.0	11.4
1500				1.8	3.2	3.8	4.7	3.4	1.3	11.8
1800			.2	1.0	3.6	2.4	4.0	4.6	1.6	12.6
2100		.1	.1	1.3	3.4	2.3	3.4	3.8	1.3	14.3
Av.	.0	.1	.2	1.5	3.5	2.7	4.1	3.8	1.6	12.5
					May					
0300	.2	.8	.7	2.2	2.1	3.2	5.3	5.7	1.8	9.0
0900			.2	1.7	5.0	3.0	4.0	5.6	2.9	8.6
1200				.7	4.1	4.7	7.0	5.2	2.4	6.9
1500				.4	2.8	5.1	9.1	5.3	1.4	6.9
1800				.6	2.2	3.7	7.7	4.9	2.3	9.6
2100		.1	.1	1.0	1.6	3.4	5.8	5.8	2.4	10.8
Av.	.0	.2	.2	1.1	3.0	3.8	6.5	5.4	2.2	8.6
					June					
0300	.1	1.3	2.3	2.9	2.3	2.8	4.9	5.4	1.7	6.3
0900			.1	3.8	4.8	3.1	5.2	4.2	1.9	6.9
1200				.4	4.6	5.7	7.8	3.4	1.2	6.9
1500				.4	2.6	4.4	10.0	3.6	1.2	7.6
1800			.1	.9	2.6	3.6	7.2	4.8	1.2	9.6
2100			.1	2.6	1.7	2.9	5.8	6.7	1.7	8.5
Av.	.0	.2	.4	1.8	3.1	3.8	6.8	4.7	1.5	7.7
					July					
0300	.6	1.9	2.6	3.6	2.3	2.3	6.0	4.9	1.2	5.6
0900		.1	1.0	5.3	4.9	2.3	4.7	4.4	1.6	6.7
1200			.1	3.1	5.0	5.3	6.3	3.3	1.3	6.6
1500				1.2	4.4	5.1	7.3	4.1	1.0	7.9
1800				1.6	4.0	2.7	7.0	5.6	1.1	9.0
2100		.1	.6	2.9	2.9	2.0	5.4	5.3	3.0	8.8
Av.	.1	.4	.7	3.0	3.9	3.3	6.1	4.6	1.5	7.4
					August					
0300	.8	1.6	1.3	3.3	2.8	2.5	5.6	5.2	.9	5.7
0900		.1	.8	5.9	5.3	2.5	4.6	5.8	1.4	4.3
1200			.2	3.2	4.8	3.7	7.1	4.3	.9	4.8
1500			.1	2.8	4.3	4.3	8.5	4.7	1.4	4.9
1800				2.8	3.0	3.4	7.0	6.4	2.1	6.3
2100		.2	1.0	2.9	2.4	3.8	6.1	6.9	1.6	6.1
Av.	.1	.3	.6	3.5	3.8	3.5	6.5	5.6	1.4	5.4

NORTHWAY

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
					April					
0300		0.1		0.4	0.9	1.0	3.3	6.9	3.2	14.2
0900			0.1	.6	1.2	.8	2.3	3.8	3.6	17.6
1200				.6	.6	.4	2.8	4.8	3.4	17.4
1500			.1	.3	.7	.4	3.2	5.0	3.1	17.2
1800				.8	.3	.4	2.2	6.6	4.2	15.5
2100				.6	.6	1.0	2.4	7.1	2.8	15.5
Av.		.0	.0	.6	.7	.7	2.7	5.7	3.4	16.2
					May					
0300		.1		.9	.4	.6	3.3	10.8	3.3	11.6
0900				1.1	.7	1.0	4.8	6.3	3.7	13.4
1200				.8	.6	.8	6.7	9.3	3.3	9.5
1500				.2	.3	1.1	4.4	12.6	2.9	9.5
1800				.1	.2	.7	3.3	12.4	3.1	11.2
2100					.6	1.2	2.6	12.2	3.4	11.0
Av.		.0		.5	.5	.9	4.2	10.6	3.3	11.0
					June					
0300		.1		.4	.4	.6	2.4	11.2	4.1	10.8
0900				.2	.7	1.1	3.4	7.3	3.6	13.7
1200				.1	.6	.8	5.5	9.8	3.0	10.2
1500					.6	.4	3.9	12.7	3.6	7.8
1800					.4	.2	2.7	13.0	3.7	10.0
2100					.7	.2	2.9	13.1	4.0	9.1
Av.		.0		.1	.6	.6	3.5	11.2	3.7	10.3
					July					
0300			.1	.4	.8	.8	2.7	13.0	[illegible]	9.1
0900			.1	.4	1.6	2.0	3.5	7.1	3.7	13.0
1200				.2	1.1	1.6	4.6	6.9	[illegible]	12.6
1500				.2	.6	1.0	3.3	10.0	[illegible]	12.8
1800				.1	.6	.3	2.1	11.4	[illegible]	12.6
2100			.1	.1	.4	.7	[illegible]	12.2	[illegible]	12.0
Av.			.1	.2	.8	1.1	[illegible]	10.1	[illegible]	12.0
					August					
0300	0.1		.1	.6	.6	.8	[illegible]	11.3	[illegible]	10.0
0900		.1	.2	.7	1.6	1.0	[illegible]	9.2	[illegible]	12.9
1200			.1		1.0	2.0	[illegible]	8.8	[illegible]	10.6
1500				[illegible]	.4	1.2	[illegible]	8.1	[illegible]	[illegible]
1800				[illegible]	.5	.4	3.5	10.7	3.5	11.3
2100				[illegible]	.6	.4	3.2	12.1	[illegible]	11.1
Av.	.0	.0	.1	[illegible]	.8	1.0	[illegible]	9.9	[illegible]	11.4

SUMMIT

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
					April					
0300			0.2	0.7	1.7	1.3	3.6	5.0	1.7	15.8
0900				.1	2.1	1.7	3.6	4.0	2.8	15.7
1200				.2	1.6	1.4	4.2	4.8	2.8	15.0
1500		0.1		.5	1.6	1.2	3.7	5.8	3.1	14.0
1800				.4	2.0	.9	4.4	5.4	2.2	14.7
2100				.7	1.8	1.3	4.1	4.1	1.9	16.1
Av.		.0	.0	.4	2.0	1.3	3.9	4.8	2.4	15.2
					May					
0300		.3	.9	2.4	2.8	1.3	3.1	6.1	2.2	11.9
0900				1.4	2.9	2.9	2.9	6.6	2.2	12.1
1200		.1		.9	2.3	1.7	4.9	7.3	2.2	11.6
1500				.6	1.9	1.4	5.7	7.9	2.3	11.2
1800				.9	1.4	1.3	3.9	7.6	2.2	13.7
2100			.3	1.1	2.0	1.3	3.4	6.5	1.9	14.5
Av.		.1	.2	1.2	2.2	1.6	4.0	7.0	2.2	12.5
					June					
0300		.3	.9	2.4	3.2	[illegible]	4.1	6.2	[illegible]	9.0
0900			.1	1.4	[illegible]	[illegible]	5.8	5.4	[illegible]	9.0
1200			.1	.1	2.2	[illegible]	6.6	8.6	[illegible]	7.6
1500				.2	1.4	[illegible]	5.6	9.8	[illegible]	8.1
1800				.2	1.7	[illegible]	5.8	9.3	1.7	9.3
2100				.8	2.4	[illegible]	4.4	6.7	[illegible]	10.6
Av.		.1	.2	.8	2.3	[illegible]	5.4	7.7	[illegible]	9.0
					July					
0300	0.2	.9	1.7	3.1	[illegible]	[illegible]	4.2	4.9	[illegible]	8.9
0900			.2	2.0	[illegible]	[illegible]	6.1	3.7	[illegible]	5.6
1200				1.2	[illegible]	.4	6.9	5.7	[illegible]	9.7
1500				[illegible]	[illegible]	[illegible]	8.0	7.8	[illegible]	9.0
1800		.1		[illegible]	[illegible]	[illegible]	6.7	8.9	[illegible]	8.8
2100	.1	.1	.3	[illegible]	[illegible]	[illegible]	5.7	7.7	1.7	9.7
Av.	.1	.2	.4	[illegible]	[illegible]	[illegible]	6.3	6.4	[illegible]	9.1
					August					
0300	.1	.3	.3	[illegible]	4.4	2.7	4.8	5.9	1.4	7.5
0900			.1	[illegible]	[illegible]	3.4	6.4	5.3	[illegible]	6.9
1200			.2	[illegible]	[illegible]	[illegible]	9.1	5.1	[illegible]	6.9
1500				[illegible]	2.4	[illegible]	8.3	6.3	[illegible]	7.2
1800		.1		[illegible]	[illegible]	[illegible]	8.0	6.7	[illegible]	7.4
2100		.1	.4	[illegible]	[illegible]	[illegible]	6.4	6.7	[illegible]	8.7
Av.	.0	.1	.2	[illegible]	[illegible]	[illegible]	7.2	6.7	1.4	7.4

Table 31.--Height of ceiling by hour of day, and number of days per month in each height class--Continued

(Av. 1950-58)

TANANA

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
					Ceiling in hundreds of feet					
April										
0300				0.1	0.3	1.3	2.9	5.2	2.2	18.0
0900				.3	.8	1.2	1.6	4.4	4.6	17.1
1200				.1	.8	1.0	2.2	4.3	2.9	18.7
1500				.1	.8	.1	2.7	5.1	4.3	16.9
1800				.2		.8	2.0	5.7	3.2	18.1
2100					.4	1.3	3.2	4.5	2.5	18.0
Av.				.1	.5	1.0	2.4	4.9	3.3	17.8
May										
0300	0.1		0.1	.1	.6	1.0	2.0	8.9	2.4	15.8
0900				.1	1.1	1.4	2.0	7.1	3.0	16.3
1200					.8	.9	4.8	7.1	3.4	14.0
1500					.6	.8	5.0	8.9	3.4	12.3
1800				.1	.3	.6	4.8	8.4	2.9	13.9
2100				.2	.7	.2	3.4	8.6	1.8	16.1
Av.	.0		.0	.1	.7	.8	3.7	8.2	2.8	14.7
June										
0300				.3	1.3	.9	2.6	7.9	3.1	13.9
0900				.3	1.3	.9	3.0	7.0	3.3	14.2
1200				.3	.4	1.1	4.2	9.2	3.4	11.4
1500				.1	.3	1.0	3.9	9.6	3.4	11.7
1800				.1	.4	.6	3.8	9.1	3.0	13.0
2100				.1	.2	.3	2.9	8.9	3.4	14.2
Av.				.2	.6	.8	3.4	8.6	3.3	13.1
July										
0300		0.1		1.4	1.9	2.2	2.9	6.8	1.6	14.1
0900				1.2	3.0	1.7	4.4	6.6	1.4	12.7
1200				1.0	2.1	2.6	5.8	6.2	2.0	11.3
1500				.4	2.1	2.4	5.4	6.4	3.6	10.7
1800				.7	1.0	1.8	5.2	7.2	3.4	11.7
2100				.4	1.7	1.7	3.1	8.2	2.7	13.2
Av.		.0		.8	2.0	2.1	4.5	6.9	2.4	12.3
August										
0300		.3	.2	.7	2.1	2.1	5.7	9.4	1.6	8.9
0900		.1	.2	1.0	3.6	3.4	3.1	8.4	2.2	9.0
1200			.3	.4	2.4	3.6	6.3	6.3	2.9	8.8
1500				.6	1.8	2.9	7.2	7.6	2.6	8.3
1800				.1	1.1	2.2	5.7	9.7	2.1	10.1
2100					1.6	2.7	5.2	9.1	2.4	10.0
Av.		.1	.1	.5	2.1	2.8	5.5	8.4	2.3	9.2

UNALAKLEET,

Time of day	0	1-2	3-4	5-9	10-19	20-29	30-49	50-95	96-199	Unlim.
					Ceiling in hundreds of feet					
April										
0300	0.1	0.2	0.6	0.4	2.4	2.6	4.3	4.8	1.2	13.4
0900		.1	.4	1.1	2.2	1.6	4.0	5.7	.8	14.1
1200		.1	.2	.3	1.9	1.6	4.4	5.3	1.3	14.9
1500			.1	1.1	1.6	1.8	3.2	5.3	1.9	15.0
1800	.1		.1	.8	2.6	1.6	3.1	4.2	2.1	15.4
2100			.3	1.0	2.1	1.8	2.7	4.4	1.8	15.9
Av.	.0	.1	.3	.8	2.1	1.8	3.6	5.0	1.5	14.8
May										
0300	.1	.1	.8	1.7	2.0	.9	3.9	7.1	1.6	12.8
0900			.1	2.3	1.8	1.1	4.0	6.2	1.4	14.1
1200			.1	1.6	1.8	1.2	4.1	6.7	1.3	14.2
1500		.1	.4	1.1	1.4	1.9	3.8	7.2	1.6	13.5
1800		.4	.4	.7	1.2	1.6	3.2	8.3	2.8	12.4
2100	.2	.2	.8	.9	1.0	1.3	2.5	8.1	1.8	14.2
Av.	.1	.1	.4	1.4	1.5	1.3	3.6	7.3	1.8	13.5
June										
0300	.1	.4	.4	1.1	2.9	2.4	3.1	8.0	1.6	10.0
0900		.2	.3	1.2	3.0	2.7	4.6	6.0	1.1	10.9
1200		.3	.2	1.4	2.4	2.3	5.4	5.1	1.8	11.1
1500		.3	.2	1.3	2.6	1.9	4.9	6.6	1.2	11.0
1800		.3	.3	1.2	2.1	1.4	4.3	7.1	1.5	11.8
2100	.1	.6	.3	1.1	2.0	1.7	4.4	6.9	1.3	11.6
Av.	.0	.4	.3	1.2	2.5	2.1	4.4	6.6	1.4	11.1
July										
0300			.2	1.4	5.2	4.0	4.9	5.8	1.3	8.2
0900				2.3	4.7	3.7	5.0	5.0	1.6	8.7
1200				2.2	4.3	3.8	4.6	5.9	1.6	8.6
1500			.4	.8	4.6	2.3	6.6	5.2	1.4	9.7
1800			.1	.9	4.3	3.3	5.6	6.7	1.8	8.3
2100		.1	.2	.9	5.1	3.8	4.8	6.3	1.1	8.7
Av.		.0	.2	1.4	4.7	3.5	5.2	5.8	1.5	8.7
August										
0300		.1	.2	1.6	5.1	4.7	6.7	6.2	1.0	5.4
0900				2.0	4.7	4.3	6.0	5.7	2.0	6.3
1200		.1		1.6	3.9	6.4	6.2	4.6	2.2	6.0
1500		.2		.8	4.8	3.9	7.1	6.9	1.7	5.6
1800		.1		1.1	3.8	4.1	6.7	7.9	1.8	5.5
2100			.3	1.8	4.0	3.3	5.8	7.0	1.7	7.1
Av.		.1	.1	1.5	4.4	4.4	6.4	6.4	1.7	6.0

Source: United States Weather Bureau coded data.

Table 32.--Type of weather by time of day, and number of days per month in each weather class

(Av. 1950-58)

ANCHORAGE

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunder-storm
April							
0300	1.1	2.3		0.3			
0900	1.0	2.0		0.6			
1200	1.6	1.7		0.6			
1500	1.2	1.6		0.2			
1800	1.1	1.4		0.6			
2100	1.2	1.6		0.1			
Av.	1.2	1.9		.4			
May							
0300	2.5	0.1		0.2			
0900	2.1	0.1		0.1			
1200	2.4						
1500	3.8						
1800	3.7						
2100	3.6	0.1		0.2			
Av.	3.1	.0		.1			
June							
0300	4.7			0.8			
0900	3.7			0.2		0.1	
1200	4.3			0.1			
1500	3.8			0.1			0.1
1800	3.7						
2100	3.7			0.2			
Av.	4.0			.2		.0	.0
July							
0300	5.1			1.3		0.4	
0900	4.9			1.0		0.4	
1200	4.6			0.6		0.3	
1500	4.7			0.2		0.3	0.1
1800	6.3			0.2		0.4	
2100	5.2			0.6		0.4	
Av.	5.1			.6		.4	.0
August							
0300	[illegible]			1.4			
0900	[illegible]			1.3			
1200	[illegible]			0.7			
1500	[illegible]			0.3			
1800	[illegible]			0.4			0.1
2100	[illegible]			0.7		0.1	
Av.	[illegible]			0.8		.0	.0

BETHEL

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunder-storm
April							
0300	1.2	5.1		2.6			
0900	0.9	5.3		2.1			
1200	1.7	4.7		0.8			
1500	1.2	4.1		0.9			
1800	1.8	4.3		1.0			
2100	1.0	3.6		1.3			
Av.	1.3	4.6		1.4			
May							
0300	2.7	2.3		1.4			
0900	3.0	2.6		0.7	0.1		
1200	3.7	1.3		0.1			
1500	4.7	0.9		0.2			
1800	5.0	0.6	0.1	0.2			
2100	2.7	0.6					
Av.	3.6	1.4	.0	.4	.0		
June							
0300	4.9	0.1		2.9		0.2	
0900	6.1	0.1		1.4		0.6	
1200	5.6	0.1		0.7		0.1	
1500	4.2			0.3		0.2	
1800	4.7			0.3		0.2	
2100	5.0			0.3		0.1	
Av.	5.1	.0		1.0		.2	
July							
0300	5.9			4.4	0.1	0.3	
0900	4.8			3.3		0.3	
1200	5.1			1.7		0.3	
1500	5.7			1.2		0.3	
1800	5.3			0.9		0.4	
2100	4.8			1.2		0.2	
Av.	5.4			2.1	.0	.3	
August							
0300	8.2			6.7	0.1		
0900	7.9			5.9	0.1		
1200	6.9			3.3	0.1	0.1	
1500	7.6			2.2		0.1	0.1
1800	6.9			2.6	0.1	0.1	
2100	7.6			2.6	0.1	0.2	
Av.	7.5			3.9	.1	.1	.0

BETTLES

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunder-storm
April							
0300	0.1	4.6		0.8			
0900	0.1	3.6		1.7			
1200	0.1	3.3		1.1			
1500	0.3	2.9		0.9			
1800	0.3	2.4		1.2			
2100	0.3	3.0		1.0			
Av.	.2	3.3		1.1			
May							
0300	1.4	1.4		1.1			
0900	1.4	1.7		1.0			
1200	1.3	0.8		0.6			
1500	1.4	0.3		0.4			0.1
1800	1.9	0.6		0.3			
2100	1.4	0.5		0.2			
Av.	1.5	.9		.6			.0
June							
0300	2.8	0.1		0.6		0.7	0.1
0900	2.4			0.4		0.4	
1200	3.6			0.3		0.4	0:1
1500	3.2	0.1		0.4		0.3	0.1
1800	1.7			0.1		0.3	
2100	1.8			0.2		0.4	
Av.	2.6	.0		.3		.4	.0
July							
0300	2.1			1.3	0.1	1.8	
0900	3.6			1.2		1.8	0.1
1200	3.9			1.1		1.8	
1500	3.1			0.4	0.1	1.9	
1800	2.9			0.7		2.0	0.1
2100	2.8			1.0		2.0	0.1
Av.	3.1			1.0	.0	1.9	.0
August							
0300	5.2			3.4	0.1	0.8	
0900	5.9			2.8	0.1	0.9	
1200	5.7			1.6		0.6	0.1
1500	5.9			1.4		0.7	
1800	4.4			1.2		0.9	
2100	5.7			1.9	0.1	0.6	
Av.	5.5			2.0	.0	.8	.0

BIG DELTA

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunder-storm
April							
0300	0.2	2.4		0.1			
0900	0.1	2.7		0.3			
1200	0.1	1.6		0.2			
1500	0.1	1.2		0.1			
1800	0.2	1.2		0.1			
2100	0.2	1.5		0.1			
Av.	.2	1.8		.2			
May							
0300	1.1	0.4		0.2			
0900	1.7	0.6					
1200	1.3	0.3		0.1			
1500	1.9	0.3		0.1			
1800	2.0	0.2		0.1			0.1
2100	2.1	0.4		0.2			
Av.	1.9	.4		.1			.0
June							
0300	3.6			0.2			
0900	2.4			0.1		0.3	
1200	2.8			0.2		0.2	
1500	3.0			0.2		0.2	0.3
1800	3.6			0.1		0.1	0.6
2100	2.1					0.1	0.2
Av.	2.9			.1		.2	.2
July							
0300	4.2			0.7	0.1	0.9	
0900	4.1			0.3		0.6	
1200	2.9			0.1		0.6	
1500	3.9			0.1		0.7	
1800	3.3			0.2		1.1	0.3
2100	3.9			0.2		1.2	0.4
Av.	3.7			.3	.0	.5	.1
August							
0300	4.0			0.6		0.1	
0900	4.0			0.2		0.4	
1200	2.6					0.2	
1500	3.2		0.1			0.4	
1800	3.1					0.2	0.1
2100	4.1					0.8	
Av.	3.5		.0	.1		.4	.0

FAIRBANKS

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunder-storm
April							
0300	0.1	2.3		0.3			
0900	0.1	2.1		0.1			
1200	0.3	1.2					
1500	0.2	1.0					
1800	0.3	1.1		0.1			
2100	0.4	1.7		0.2			
Av.	.2	1.6		.1			
May							
0300	2.2	0.4		0.2			
0900	2.1	0.6		0.2			
1200	2.4	0.3		0.3			
1500	1.4	0.1		0.2			
1800	2.2	0.1	0.1	0.1			
2100	1.9	0.3		0.1			0.1
Av.	2.0	.3	.0	.2			.0
June							
0300	2.7			0.3		0.4	
0900	2.6			0.2		0.3	
1200	2.3			0.1		0.2	0.3
1500	2.9					0.2	0.1
1800	3.7			0.1		0.4	0.2
2100	3.1			0.1		0.9	0.2
Av.	2.9			.1		.4	.1
July							
0300	4.6			0.3	0.3	1.2	
0900	4.3			0.2	0.1	1.9	
1200	3.7			0.1		1.4	0.1
1500	3.8			0.3		1.9	0.6
1800	2.9			0.1		1.6	0.1
2100	3.1			0.1		1.6	
Av.	3.7			.2	.1	1.6	.1
August							
0300	4.9			2.5	0.2	0.8	
0900	3.6			1.3	0.1	1.7	
1200	3.3			0.6		1.4	
1500	3.7			0.3		0.5	
1800	4.2			0.2		0.9	
2100	4.1			0.2		0.6	
Av.	4.0			.9	.1	1.0	

FT. YUKON

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunder-storm
April							
0300	0.2	1.9		0.2			
0900	0.1	2.0		0.1			
1200	0.1	2.7		0.2			
1500	0.3	1.1		0.3			
1800		1.3		0.2			
2100		1.8		0.4			
Av.	.1	1.8		.2			
May							
0300	1.6	0.4		0.2			
0900	1.7	0.4		0.1			
1200	1.4	0.2		0.1			
1500	1.0	0.5		0.1			
1800	1.0	0.2		0.1			
2100	1.2	0.6		0.1			
Av.	1.3	.4		.1			
June							
0300	1.7				0.7		
0900	2.0				0.8		
1200	1.7				0.7		
1500	1.6				0.8		
1800	1.9				0.5		
2100	1.9				0.6		
Av.	1.8				.7		
July							
0300	2.0				0.2	2.1	
0900	3.0					2.9	
1200	2.3			0.1		2.6	
1500	2.9			0.1		2.9	
1800	3.3					1.4	
2100	2.8					2.2	
Av.	2.7			.0	.0	2.4	
August							
0300	2.4			0.3		1.6	
0900	3.1			0.2		2.3	
1200	2.8					1.4	
1500	3.1			0.1		1.3	
1800	3.9			0.1		0.3	
2100	3.8					1.2	
Av.	3.2			.1		1.4	

Table 32.--Type of weather by time of day, and number of days per month in each weather class--Continued

(Av. 1950-58)

GALENA

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunderstorm
				April			
0300	0.4	4.1		0.1			
0900	0.6	3.3		0.7			
1200	0.4	2.9		0.2			
1500	0.6	2.4		0.1			
1800	0.7	1.7		0.2			
2100	0.8	1.9		0.3			
Av.	.6	2.7		.3			
				May			
0300	1.7	0.8		0.2			
0900	2.3	0.8		0.1			
1200	2.2	0.3					
1500	2.8	0.3					
1800	2.6	0.6					
2100	1.6	0.6					
Av.	2.2	.6		.0			
				June			
0300	3.1					1.0	0.1
0900	2.2			0.2		1.3	
1200	3.0					1.0	0.1
1500	2.1			0.1		1.0	
1800	2.6		0.1	0.1		1.3	0.1
2100	1.8					1.0	0.1
Av.	2.5		.0	.1		1.1	.1
				July			
0300	3.9			0.9		2.1	
0900	3.4			0.8	0.2	1.9	
1200	3.2			0.2	0.2	1.2	0.1
1500	3.2			0.6	0.1	1.8	0.1
1800	4.9			0.2		2.1	0.2
2100	3.2			0.4		1.9	0.1
Av.	3.6			.5	.1	1.8	.1
				August			
0300	6.5			1.2		0.1	
0900	6.4			1.0		0.5	
1200	5.9			0.5		0.4	
1500	6.1			0.2		0.4	
1800	6.0			0.2		0.2	0.1
2100	5.2			0.4		0.2	
Av.	6.0			.6		.3	.0

GULKANA

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunderstorm
				April			
0300		1.3		0.2			
0900		1.1					
1200	0.1	1.1					
1500	0.4	1.0					
1800	0.3	0.8					
2100	0.4	0.9					
Av.	.2	1.0		.0			
				May			
0300	1.2	0.3		0.3			
0900	1.0	0.2		0.3			
1200	1.1	0.2		0.2			
1500	1.8	0.3		0.1			
1800	1.8	0.1					
2100	0.9	0.2					0.1
Av.	1.3	.2		.2			.0
				June			
0300	2.0			0.6			
0900	2.2			0.1			
1200	1.9						0.3
1500	2.6						0.3
1800	2.9						0.4
2100	1.9						0.1
Av.	2.2			.1			.2
				July			
0300	4.4	0.1		0.8	0.1	0.2	
0900	3.6			0.4		0.1	
1200	2.8			0.1		0.2	0.1
1500	3.0			0.1		0.3	0.4
1800	3.2					0.3	0.7
2100	3.8			0.2		0.3	0.1
Av.	3.5	.0		.3	.0	.2	.2
				August			
0300	4.1	0.1		1.2			
0900	3.8			0.4			
1200	4.2			0.1			
1500	4.7			0.1			
1800	4.4						
2100	4.8			0.2			
Av.	4.3	.0		.3			

HOMER

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunderstorm
				April			
0300	2.4	2.2		1.0			
0900	2.6	2.1		0.9			
1200	2.9	1.8		0.3			
1500	3.3	2.3		0.4			
1800	2.6	1.9		0.6			
2100	2.6	1.8		1.0			
Av.	2.7	2.0		.7			
				May			
0300	3.2			0.7			
0900	2.8			0.2			
1200	2.8	0.2		0.1			
1500	4.6			0.1			
1800	3.3			0.1			
2100	3.1			0.1			
Av.	3.3	.0		.2			
				June			
0300	3.6			1.2			
0900	3.1			0.3			
1200	2.9			0.3			
1500	3.9						
1800	2.6			0.2			
2100	3.4			0.4			
Av.	3.3			.4			
				July			
0300	4.4			1.9	0.2	0.1	
0900	2.9			0.4		0.2	
1200	3.4			0.1		0.1	
1500	3.6			0.4		0.1	
1800	3.7			0.4		0.1	
2100	3.4			0.7		0.1	
Av.	3.6			.6	.0	.1	
				August			
0300	3.6			2.3			
0900	4.3			0.8		0.1	
1200	5.4			0.6			
1500	5.0			0.7			
1800	4.8			0.7			
2100	5.4			1.2			
Av.	4.8			1.0		.0	

ILIAMNA

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunderstorm
				April			
0300	1.2	4.3		0.8			
0900	1.0	3.6		1.1			
1200	1.4	3.0		0.7			
1500	0.9	2.8		1.0			
1800	1.2	3.2		1.2			
2100	1.1	3.4		1.6			
Av.	1.1	3.4		1.1			
				May			
0300	4.6	0.8		1.3			
0900	2.8	0.7		0.7			
1200	2.7	0.4		0.3			
1500	3.6	0.3		0.3			
1800	3.3	0.3		0.2			
2100	4.7	0.2		0.7			
Av.	3.6	.5		.6			
				June			
0300	4.0			1.6		0.1	
0900	3.8			1.1			
1200	3.7			0.4			
1500	3.9			0.1			0.1
1800	2.9			0.1			
2100	3.3			0.3		0.1	
Av.	3.6			.6		.0	.0
				July			
0300	3.0			4.6	0.3		
0900	3.8			2.9	0.2	0.3	
1200	3.9			0.9	0.1	0.4	
1500	4.0			1.2	0.1	0.6	
1800	4.6			0.8		0.3	0.1
2100	4.0			0.9		0.3	
Av.	3.9			1.9	.1	.3	.0
				August			
0300	6.6			4.3		0.1	
0900	5.8			2.7			
1200	5.8			1.6		0.1	
1500	5.6			2.0			
1800	5.9			2.2			
2100	5.8			2.7		0.1	
Av.	5.9			2.6		.0	

KOTZEBUE

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunderstorm
				April			
0300	0.8	5.8		2.3			
0900	0.3	4.7		2.7	0.2		
1200	0.3	5.1		2.3	0.2		
1500	0.6	4.9		2.1	0.1		
1800	0.8	4.8		1.7	0.1		
2100	0.8	5.2		1.9	0.1		
Av.	.6	5.1		2.2	.1		
				May			
0300	1.9	2.1		2.9			
0900	1.9	2.1		2.8			
1200	1.8	1.3		1.9			
1500	1.3	0.9		0.9			
1800	1.2	0.8		1.1			
2100	2.0	1.1		1.7			
Av.	1.7	1.4		1.9			
				June			
0300	3.2			2.9			
0900	2.0	0.1		2.6			
1200	2.3			2.3			
1500	1.3			1.9			
1800	1.6			1.9			
2100	3.0			2.4			
Av.	2.2	.0		2.3			
				July			
0300	4.1			2.8		0.4	
0900	2.9			2.2		0.4	
1200	2.8			1.4		0.3	
1500	3.7			0.9		0.3	
1800	3.8			1.0		0.4	0.1
2100	3.4			1.3		0.4	0.1
Av.	3.4			1.6		.4	.0
				August			
0300	7.0			2.3	0.1	0.1	0.1
0900	5.3			2.2		0.1	
1200	6.3			1.8		0.2	
1500	5.9			1.2		0.2	
1800	5.3			1.4		0.2	
2100	5.3			1.3	0.1	0.2	
Av.	5.8			1.7	.0	.2	.0

LAKE MINCHUMINA

Time of day	Rain	Snow sleet	Hail	Fog	Fog w/ smoke	Smoke haze	Thunderstorm
				April			
0300	0.1	2.3		0.4			
0900	0.3	2.1					
1200	0.3	1.9		0.1			
1500	0.4	1.7					
1800	0.2	1.7		0.1			
2100	0.1	1.6		0.2			
Av.	.2	1.9		.1			
				May			
0300	1.6	0.8		0.8			
0900	1.2	0.4		0.3			
1200	1.1	0.3		0.1			0.1
1500	2.0	0.4		0.3			
1800	1.3	0.4		0.1			
2100	1.7	0.8		0.1			
Av.	1.5	.5		.3			.0
				June			
0300	4.0			0.2		0.6	
0900	3.4					0.6	
1200	2.3					0.3	
1500	2.4					0.4	0.2
1800	3.2					0.2	0.4
2100	2.1					0.4	0.1
Av.	2.9			.0		.4	.1
				July			
0300	4.4			1.1		1.4	
0900	2.9			0.1		1.8	
1200	4.1					1.1	0.1
1500	4.2					0.7	0.3
1800	3.4			0.1		0.9	0.1
2100	4.3					0.9	0.3
Av.	3.9			.2		1.1	.1
				August			
0300	5.0			0.9		0.3	0.1
0900	4.7			0.3		0.2	
1200	4.3			0.4		0.2	0.1
1500	3.4					0.2	0.2
1800	5.1			0.1		0.2	
2100	5.2					0.2	
Av.	4.6			.3		.2	.1

Table 32.--Type of weather by time of day, and number of days per month in each weather class--Continued

(Av. 1950-58)

MCGRATH

Time of day	Rain	Snow sleet	Hail	Fog	Fog w smoke	Smoke haze	Thunder-storm
April							
0300	1.6	3.2		0.1			
0900	1.8	3.4		0.4			
1200	1.9	2.9		0.3			
1500	1.7	2.1		0.4			
1800	1.9	1.9		0.2			
2100	1.7	2.4		0.3			
Av.	1.8	2.7		.3			
May							
0300	2.9	0.2		0.3			
0900	2.9	0.9		0.1			
1200	2.3	0.4		0.2			0.1
1500	2.3	0.2					0.1
1800	2.7	0.2					
2100	2.7	0.2		0.1			
Av.	2.6	.4		.1			.0
June							
0300	3.8			0.7		1.4	
0900	3.9			0.1		1.7	
1200	2.8		0.1	0.1		1.5	
1500	3.3					1.3	0.1
1800	3.1			0.1		1.4	0.4
2100	3.8					1.4	
Av.	3.4		.0	.2		1.5	.1
July							
0300	4.8			1.2		1.4	
0900	4.7			0.6		1.3	
1200	4.6			0.7		1.2	
1500	5.1			0.5		0.8	0.1
1800	5.4			0.7		0.8	
2100	5.1			0.4		1.0	0.3
Av.	4.8			.7		1.1	.1
August							
0300	7.2			2.2	0.2		
0900	5.5			2.3	0.1	0.1	
1200	5.6			0.6		0.2	
1500	5.7			0.5		0.2	
1800	7.7			1.0		0.2	0.1
2100	5.4			1.1		0.1	0.1
Av.	5.5			1.3	.0	.1	.0

NAKNEK

Time of day	Rain	Snow sleet	Hail	Fog	Fog w smoke	Smoke haze	Thunder-storm
April							
0300	2.2	3.6		2.4			
0900	1.7	3.4		2.0			
1200	2.1	3.3		1.2			
1500	2.3	2.7		1.5			
1800	2.1	2.5		1.0			
2100	2.1	3.1		1.3			
Av.	2.1	3.2		1.5			
May							
0300	4.7	0.9		3.4			
0900	3.9	0.4		0.9			
1200	4.7	0.8		0.4			
1500	7.0	0.1		0.2			
1800	6.3	0.1		0.3			
2100	4.3	0.1		1.1			
Av.	5.2	.3		1.0			
June							
0300	5.9	0.1		6.4			
0900	3.8			1.4			
1200	4.7	0.1	0.1	0.3			
1500	4.4			0.3			
1800	4.9			0.4			
2100	4.9			1.0			0.1
Av.	4.8	.0	.0	1.6			.0
July							
0300	4.8			8.2	0.1		0.1
0900	4.1			3.2		0.1	
1200	3.2			1.7		0.1	
1500	3.8			1.1		0.1	0.1
1800	4.2			1.7		0.1	0.1
2100	4.4			2.6		0.1	0.1
Av.	4.2			3.3	.0	.1	.1
August							
0300	5.9			9.3			
0900	5.0			4.3			
1200	4.4			2.1		0.1	
1500	5.4			2.2		0.1	
1800	4.9			2.5			
2100	4.9			3.3		0.1	
Av.	5.1			4.0		.0	

NORTHWAY

Time of day	Rain	Snow sleet	Hail	Fog	Fog w smoke	Smoke haze	Thunder-storm
April							
0300		2.3		0.6			
0900	0.2	2.2		0.2			
1200	0.3	2.0		0.1			
1500	0.3	1.5					
1800	0.3	1.1					
2100	0.1	2.3					
Av.	.2	1.9		.2			
May							
0300	2.4	0.4		1.1			
0900	2.4	0.2		0.2			
1200	2.3	0.8					0.2
1500	2.9	0.2		0.1			0.3
1800	2.3	0.2					
2100	3.0	0.2					
Av.	2.6	.3		.2			.1
June							
0300	3.3			0.7		0.2	
0900	3.7			0.1		0.2	
1200	3.5		0.1	0.2			1.3
1500	3.2			0.2		0.3	1.4
1800	3.7			0.1		0.3	0.7
2100	3.7					0.2	0.3
Av.	3.5		.0	.2		.2	.6
July							
0300	3.8			0.8		0.5	
0900	4.2			0.4		0.6	0.2
1200	3.2			0.1		0.6	0.9
1500	4.3			0.2		0.5	0.9
1800	4.3					0.4	1.2
2100	4.7			0.1		0.7	0.4
Av.	4.1			.3		.5	.6
August							
0300	5.0			1.8			
0900	4.2			0.4		0.2	
1200	2.4			0.2		0.4	0.1
1500	4.1			0.1		0.1	0.2
1800	3.9			0.1		0.1	0.4
2100	4.5			0.1		0.2	
Av.	4.0			.4		.2	.1

SUMMIT

Time of day	Rain	Snow sleet	Hail	Fog	Fog w smoke	Smoke haze	Thunder-storm
April							
0300		5.4		0.6			
0900		4.7		1.3			
1200	0.1	7.4		0.4			
1500		3.6		1.3			
1800	0.1	4.1		0.7			
2100	0.1	3.7		0.3			
Av.	.1	4.1		.5			
May							
0300	1.4	2.2		1.8			
0900	1.7	2.1		1.2			
1200	1.8	2.2		0.4			
1500	1.9	1.8		0.8			
1800	1.6	1.9		0.8			
2100	1.9	1.9		0.6			
Av.	1.8	2.3		.9			
June							
0300	3.8	1.3		1.1			
0900	7.2	1.2		0.1			
1200	3.8	1.1	0.1	0.1			0.1
1500	4.1	1.2		0.2			0.4
1800	4.1	0.1				0.1	0.1
2100	3.8	0.1		0.2		0.1	
Av.	3.7	.8	.0	.3		.0	.1
July							
0300	5.2			4.5		0.2	
0900	4.9			0.6		0.3	
1200	4.7			0.3		0.3	0.1
1500	5.4			0.2		0.2	0.1
1800	5.2			0.7		0.4	0.1
2100	5.9			1.3		0.4	
Av.	5.4			1.3		.3	.0
August							
0300	5.2	0.2		3.3			
0900	5.8	0.1		0.9			
1200	5.9	0.1		0.9			
1500	5.8			0.8			
1800	6.1	0.1		1.0			0.1
2100	7.3	0.2		1.8		0.1	
Av.	6.0	.1		1.4		.0	.0

TANANA

Time of day	Rain	Snow sleet	Hail	Fog	Fog w smoke	Smoke haze	Thunder-storm
April							
0300	0.2	2.3		0.3			
0900	0.6	2.5		0.4			
1200	0.4	2.1		0.4			
1500	0.4	1.7		0.3			
1800	0.4	0.8		0.1			
2100	0.2	1.8					
Av.	.4	1.9		.2			
May							
0300	1.3	0.8		0.8			
0900	1.3	1.1		0.4			
1200	1.7	0.4		0.4			
1500	2.2	0.3		0.3			
1800	1.8	0.8		0.3			
2100	2.1	0.8		0.2			
Av.	1.7	.8		.4			
June							
0300	3.2			0.4	0.1	0.9	
0900	2.1			0.2		1.4	
1200	2.1					1.1	0.1
1500	1.7					1.0	0.1
1800	2.3			0.1	0.1	0.7	
2100	2.3			0.1		0.8	0.1
Av.	2.3			.1	.0	1.0	.0
July							
0300	2.6			0.9	0.3	1.3	
0900	3.0			0.9	0.1	2.1	
1200	3.7			0.4	0.1	1.8	0.3
1500	2.9			0.3	0.1	1.2	0.2
1800	2.7			0.4		1.7	0.3
2100	3.2			0.3		1.7	0.1
Av.	3.0			.5	.1	1.6	.2
August							
0300	4.2			1.9	0.1	0.6	
0900	4.2	0.1		2.1	0.1	0.6	
1200	3.9			1.0		0.5	0.2
1500	4.3			0.6		0.3	0.2
1800	4.1			0.2		0.1	
2100	3.9			0.8		0.3	0.1
Av.	4.1	.0		1.1	.0	.4	.1

UNALAKLEET

Time of day	Rain	Snow sleet	Hail	Fog	Fog w smoke	Smoke haze	Thunder-storm
April							
0300	0.3	4.0		1.9			
0900	0.4	3.6		2.2	0.3		
1200	0.3	2.8		1.2	0.2		
1500	0.4	3.1	0.1	1.1			
1800	0.3	3.4		1.2			
2100	0.6	3.8		1.4			
Av.	.4	3.4	.0	1.5	.1		
May							
0300	2.7	1.2		2.4			
0900	2.2	1.7		2.3			
1200	2.0	0.9		1.0			
1500	2.3	1.1		1.1			
1800	2.1	0.8		1.3			
2100	1.9	0.6		1.6			
Av.	2.2	1.0		1.6			
June							
0300	2.8	0.1		2.3		0.3	
0900	3.3			1.4		0.1	
1200	3.7	0.1		1.7			
1500	3.7			1.4			
1800	2.0			1.3			
2100	2.3			1.4		0.1	
Av.	3.0	.0		1.6		.1	
July							
0300	4.8			0.9		0.3	
0900	4.0			1.4		0.8	
1200	4.6			1.1		0.3	0.1
1500	4.9			1.2	0.1	0.2	
1800	4.6			0.9	0.1	0.3	0.1
2100	4.3			0.6		0.5	
Av.	4.6			1.0	.0	.4	.0
August							
0300	7.1			2.3		0.2	
0900	7.6			2.1		0.2	
1200	7.1			0.8		0.1	
1500	6.0			1.1		0.1	
1800	6.3			1.3	0.1	0.1	
2100	7.1	0.1		2.2	0.1	0.1	0.1
Av.	7.2	.0		1.7	.0	.1	.0

Source: United States Weather Bureau coded data.

Table 33.--Time of season by which ground is thawed to various depths

(Av. 1950-58)

Date		Ft. Yukon	Northway	Anchorage	Bettles	Big Delta	Summit	Fairbanks	Tanana	Kotzebue	Unalakleet	Gulkana	Galena	McGrath
							6" Depth							
April	1		1/											
	11			x										
	21			x										
May	1			x		x		x	x		x	x		
	11			x	x	x	x	x	x		x	x	x	x
	21	x		x	x	x	x	x	x	x	x	x	x	x
June	1	x		x	x	x	x	x	x	x	x	x	x	x
	11	x		x	x	x	x	x	x	x	x	x	x	x
	21	x		x	x	x	x	x	x	x	x	x	x	x
							12" Depth							
April	1													
	11													
	21			x										
May	1			x		x		x						
	11			x		x	x	x	x		x			
	21	x		x	x	x	x	x	x		x	x	x	x
June	1	x	x	x	x	x	x	x	x		x	x	x	x
	11	x	x	x	x	x	x	x	x	x	x	x	x	x
	21	x	x	x	x	x	x	x	x	x	x	x	x	x
							24" Depth							
April	1													
	11													
	21													
May	1			x										
	11			x										
	21			x	x	x	x	x	x		x		x	x
June	1			x	x	x	x	x	x		x	x	x	x
	11	x		x	x	x	x	x	x		x	x	x	x
	21	x	x	x	x	x	x	x	x	x	x	x	x	x

1/ No data for 6-inch depth.

Source: United States Weather Bureau compilation.

Table 34.--Forest fire statistics for the United States, 1950-58

Year	Place	Area protected	Fires		Area burned		Cause: Lightning		Cause: Other		Size: Under ¼ acre		Size: ¼-10 acres		Size: Over 10 acres	
		M acres	Number	Number per MM acres	Acres	Acres per fire	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Alaska BLM 1/	225,000	224	1.0	2,057,817	9,186.7	27	12	197	88	94	42	46	20	84	38
1950	Other states BLM	138,121	472	3.4	78,827	167.0	152	32	320	68	84	18	121	26	267	56
	Other states all agencies 2/	573,186	104,996	183.2	3,798,464	36.2	6,491	6	98,505	94	16,215	15	50,281	48	38,500	37
	Alaska BLM	225,000	271	1.2	219,694	810.7	27	10	244	90	119	44	72	27	80	29
1951	Other states BLM	140,111	635	4.6	124,848	196.6	203	32	432	68	103	16	182	29	350	55
	Other states all agencies	575,916	105,868	183.8	3,526,373	33.3	7,029	7	98,839	93	15,682	15	51,630	49	38,556	36
	Alaska BLM	225,000	136	.6	73,801	542.6	11	8	125	92	76	56	32	24	28	20
1952	Other states BLM	140,625	637	4.6	97,223	152.6	207	32	430	68	110	17	171	27	356	56
	Other states all agencies	581,210	127,997	220.2	6,628,093	51.8	8,012	6	119,985	94	19,109	15	63,277	49	45,611	36
	Alaska BLM	225,000	285	1.3	466,748	1,637.7	75	26	210	74	126	44	64	22	95	33
1953	Other states BLM	138,680	601	4.4	107,252	178.4	176	29	425	71	111	18	194	32	296	49
	Other states all agencies	586,220	104,595	249.0	2,851,455	27.3	8,529	8	96,067	92	19,867	19	54,883	52	29,845	29
	Alaska BLM	225,000	262	1.2	1,389,920	5,305.0	63	24	199	76	125	48	53	20	84	32
1954	Other states BLM	138,446	567	4.1	117,347	207.0	164	29	403	71	94	17	171	30	302	53
	Other states all agencies	600,237	127,273	212.0	2,962,671	23.3	7,780	6	119,493	94	19,988	16	79,257	55	37,028	29
	Alaska BLM	225,000	190	.8	37,232	196.0	26	14	164	86	105	55	42	22	43	23
1955	Other states BLM	134,419	380	2.8	51,835	136.4	116	30	264	70	91	24	122	32	163	44
	Other states all agencies	603,884	87,604	145.1	2,812,208	32.1	6,261	7	81,343	93	17,981	21	48,177	55	21,446	24
	Alaska BLM	225,000	225	1.0	476,542	2,118.0	63	28	162	72	88	39	59	26	78	35
1956	Other states BLM	138,468	571	4.1	37,451	65.6	254	44	317	56	180	32	187	32	204	36
	Other states all agencies	607,032	94,338	155.4	1,985,084	21.0	11,459	12	82,879	88	21,298	23	52,067	55	20,972	22
	Alaska BLM	225,000	403	1.8	5,034,554	12,492.7	164	41	239	59	124	31	93	23	186	46
1957	Other states BLM	138,799	827	6.0	309,212	373.9	272	33	555	67	140	17	262	32	425	51
	Other states all agencies	613,382	65,702	107.1	1,286,458	19.6	5,659	9	60,043	91	15,523	24	37,768	57	12,411	19
	Alaska BLM	225,000	284	1.3	315,860	1,112.2	90	32	194	68	98	34	80	28	106	37
1958	Other states BLM	137,487	1,075	7.8	617,936	574.8	449	42	626	58	181	17	319	30	575	53
	Other states all agencies	614,134	80,308	130.8	1,461,367	18.2	10,828	13	69,480	87	20,816	26	44,184	55	15,308	19
	Alaska BLM	225,000	253	1.1	1,119,130	4,417.6	61	24	192	76	106	42	60	24	87	34
Av.	Other states BLM	138,351	641	4.6	171,326	267.3	221	34	419	65	122	19	192	30	327	51
	Other states all agencies	595,022	99,848	167.8	3,034,686	30.4	8,005	8	91,848	92	18,498	18	52,503	53	28 853	29

Source: 1/ Annual Reports of the Director, BLM (Statistical Appendix).
2/ Forest Fire Statistics. Prepared annually by the Division of Cooperative Forest Protection, Forest Service, U.S.D.A.

Table 35.--Number of fires by cause on lands protected by Bureau of Land Management, 1950-58

Year	Place	Cause[1/] LI	CF	S	DB	I	LU	RR	MI	Total
1950	Alaska	27	58	43	54	9	0	7	26	224
	Other states	152	20	115	75	40	2	31	37	472
1951	Alaska	27	77	47	71	12	2	2	33	271
	Other states	203	20	181	76	56	1	37	61	635
1952	Alaska	11	38	16	46	6	0	4	15	136
	Other states	207	21	188	73	52	1	23	72	637
1953	Alaska	75	82	35	51	1	0	0	41	285
	Other states	176	37	154	96	30	2	38	68	601
1954	Alaska	63	68	49	51	8	0	0	23	262
	Other states	164	22	127	95	46	1	16	96	567
1955	Alaska	26	75	30	25	3	0	1	30	190
	Other states	116	26	79	61	34	1	18	45	380
1956	Alaska	63	64	28	40	5	0	1	24	225
	Other states	254	31	49	78	46	1	28	84	571
1957	Alaska	164	85	30	78	11	2	2	31	403
	Other states	272	20	140	97	36	2	74	186	827
1958	Alaska	90	73	27	54	9	0	0	31	284
	Other states	449	37	185	121	83	2	43	155	1,075
		Average number of fires by cause								
1950-1958	Alaska	61	70	34	52	7	0.4	0.2	28	253
	Other states	221	26	136	86	47	2	34	89	641
		Percentage of fires by cause								
1950-1958	Alaska	24	27	13	21	3	0+	1	11	100
	Other states	35	4	21	14	7	0+	5	14	100

1/ LI - Lightning; CF - Campfires; S - Smokers; DB - Debris burning; I - Incendiary; LU - Lumbering; RR - Railroad; MI - Misc.

Source: Annual Reports of the Director, BLM (Statistical Appendix).

Table 36.--Number of fires by size class on lands protected by Bureau of Land Management, 1950-58

Year	Place	Size Class A	B	C	D	E	Total
1950	Alaska	94	46	25	7	52	224
	Other states	84	121	141	55	71	472
1951	Alaska	119	72	35	14	31	271
	Other states	103	182	155	76	119	635
1952	Alaska	76	32	16	3	9	136
	Other states	110	171	184	69	103	637
1953	Alaska	126	64	39	15	41	285
	Other states	111	194	153	52	91	601
1954	Alaska	125	53	31	16	37	262
	Other states	94	171	142	59	101	567
1955	Alaska	105	42	21	10	12	190
	Other states	91	122	79	31	57	380
1956	Alaska	88	59	40	14	24	225
	Other states	180	187	116	42	46	571
1957	Alaska	124	93	64	20	102	403
	Other states	140	262	176	79	170	827
1958	Alaska	98	80	45	16	45	284
	Other states	181	319	241	123	211	1,075
1950-	Alaska	955	541	316	115	353	2,280
1958	Other states	1,094	1,729	1,387	586	969	5,765
	Total	2,049	2,270	1,703	701	1,322	8,045
		Average number of fires by size class					
1950-	Alaska	106	60	35	13	39	253
1958	Other states	122	192	154	65	108	641
		Percent of fires by size class					
1950-	Alaska	42	24	14	5	15	100
1958	Other states	19	30	24	10	17	100
		Number of fires per million acres protected by size class					
1950-	Alaska	0.47	0.27	0.15	0.06	0.17	1.12
1958	Other states	0.88	1.39	1.11	0.47	0.78	4.63

Source: Annual Reports of the Director, BLM (Statistical Appendix).

Table 37.--Fires according to size class by number, percent of total, and number per million acres,[1/] 1950-58

Year	A			B			C			D			E			Total	
	Number	Percent of total	Number MM acres	Number	Percent of total	Number MM acres	Number	Percent of total	Number MM acres	Number	Percent of total	Number MM acres	Number	Percent of total	Number MM acres	Number	Number MM acres
1950	94	42.0	.42	46	20.5	.20	25	11.2	.11	7	3.1	.03	52	23.2	.23	224	.99
1951	119	43.9	.53	72	26.6	.32	35	12.9	.16	14	5.2	.06	31	11.4	.14	271	1.20
1952	76	55.9	.34	32	23.5	.14	16	11.8	.07	3	2.2	.01	9	6.6	.04	136	.60
1953	126	44.2	.56	64	22.4	.28	39	13.7	.17	15	5.3	.07	41	14.4	.18	285	1.27
1954	125	47.7	.56	53	20.2	.24	31	11.8	.14	16	6.1	.07	37	14.1	.16	262	1.16
1955	105	55.3	.47	42	22.1	.19	21	11.1	.09	10	5.3	.04	12	6.3	.05	190	.84
1956	88	39.1	.39	59	26.2	.26	40	17.8	.18	14	6.2	.06	24	10.7	.11	225	1.00
1957	124	30.4	.55	93	22.8	.41	64	15.7	.28	20	4.9	.09	102	26.2	.48	403	1.81
1958	98	34.5	.44	80	28.2	.36	45	15.8	.20	16	5.6	.07	45	15.8	.20	284	1.26
Av.	106	41.9	.47	60	23.7	.27	36	13.8	.15	13	5.0	.06	39	15.5	.17	253	1.12

1/ Based on 225 million acres protected.

Source: Annual Reports of the Director, Bureau of Land Management (Statistical Appendix).

Table 38.--Acreage burned by fuel types on lands protected by Bureau of Land Management, 1950-58

Year	Place	Vegetative cover type				Total
		Forest	Brush	Grass	Other	
1950	Alaska	568,123	1,353,693	47,268	88,733	2,057,817
	Other states	16,353	35,552	26,921	1	78,827
1951	Alaska	92,791	88,589	1,312	37,002	219,694
	Other states	17,157	58,185	49,506	--	124,848
1952	Alaska	14,599	8,166	4,776	45,260	73,801
	Other states	8,561	56,562	32,068	32	97,223
1953	Alaska	284,575	113,916	5,415	62,842	466,748
	Other states	17,031	46,363	33,858	--	107,252
1954	Alaska	354,817	333,890	84,588	616,625	1,389,920
	Other states	12,966	75,380	29,001	--	117,347
1955	Alaska	12,066	11,353	4,102	9,711	37,232
	Other states	2,702	25,489	23,610	34	51,835
1956	Alaska	86,075	6,011	9,942	374,514	476,542
	Other states	9,707	19,876	7,813	55	37,451
1957	Alaska	2,461,472	487,621	9,826	2,075,635	5,034,554
	Other states	9,185	170,287	129,740	--	309,212
1958	Alaska	204,454	28,973	11,874	70,559	315,860
	Other states	18,849	238,527	281,183	79,377	617,936
		Average acreage burned by fuel type				
1950-1958	Alaska	453,219	270,246	20,011	375,654	1,119,130
	Other states	12,501	81,802	68,189	8,833	171,325
	Total Average	465,720	352,048	88,200	384,487	1,290,455
		Percent of acreage burned by fuel type				
1950-1958	Alaska	40	24	2	34	100
	Other states	7	48	40	5	100

Source: Annual Reports of the Director, Bureau of Land Management, (Statistical Appendix).

Table 39.--Fires by general cause according to number, acreage, and percentage, 1940-58

Year	Lightning				Man-caused				Total	
	Number 1/	Percent	Acres 2/	Percent	Number 1/	Percent	Acres 2/	Percent	Number	Acres 3/
1940	0	0			130	100			130	4,500,000
1941	0	0			116	100			116	3,645,774
1942	0	0	Not		78	100	Not		78	452,510
1943	40	20.6	available		154	79.4	available		194	666,773
1944	18	24.6			55	75.4			73	110,604
1945	30	42.2			41	57.8			71	117,313
1946	52	40.0			78	60.0			130	1,436,597
1947	32	20.1			127	79.9			159	1,429,896
1948	21	15.7			113	84.3			134	33,676
1949	7	13.2			46	86.8			53	17,933
Total	200	17.6			938	82.4			1,138	12,411,076
Av.	20				94				114	1,241,108
1950	27	12.0	445,595	21.6	197	88.0	1,612,222	78.4	224	2,057,817
1951	27	10.0	17,484	8.0	244	90.0	202,210	92.0	271	219,694
1952	11	8.1	14,556	19.7	125	91.9	59,245	80.3	136	73,801
1953	75	26.3	381,143	81.6	210	73.7	85,605	18.4	285	466,748
1954	63	24.0	1,347,990	97.0	199	76.0	41,930	3.0	262	1,389,920
1955	26	13.7	10,467	28.1	164	86.3	26,765	71.9	190	37,232
1956	63	28.0	446,531	93.7	162	72.0	30,011	6.3	225	476,542
1957	164	40.7	4,773,323	94.8	239	59.3	261,231	5.2	403	5,034,554
1958	90	31.7	228,637	72.4	194	68.3	87,223	27.6	284	315,860
Total	546	23.9	7,665,726	76.1	1,734	76.1	2,406,442	23.9	2,280	10,072,168
Av.	61		851,748		192		267,382		253	1,119,130

Source: 1/ 1940-1945 Data from files at BLM office, Anchorage.
1946-1958 Annual reports of the Director, BLM (Statistical Appendix).

2/ Computed from annual fire reports on file at BLM office, Anchorage and from individual fire reports.

3/ 1940-1945 Forestry Program for Alaska.
1946-1958 Annual reports of the Director, BLM (Statistical Appendix).

Table 40.--Percent of all fires on which no action was taken, 1950-58

Year	Lightning			Man-caused		
	Total 1/	No action 2/		Total 1/	No action 2/	
	Number	Number	Percent	Number	Number	Percent
1950	27	18	67	197	39	20
1951	27	13	48	244	21	9
1952	11	1	9	125	28	22
1953	75	33	44	210	12	6
1954	63	25	40	199	5	3
1955	26	11	42	164	6	4
1956	63	31	49	162	15	9
1957	64	30	18	239	15	6
1958	90	21	23	194	9	5
Av.	61	20	33	193	17	9

1/ Annual Reports of the Director, Bureau of Land Management (Statistical Appendix).
2/ Coded IBM runs from individual fire reports.

Table 41.--Area burned according to cause and whether or not suppression action was taken, 1950-58

Year	Lightning				Man-caused				Total
	Action		No-action		Action		No-action		
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres
1950		0	679,080	33	82,313	4	1,296,424	63	2,057,817
1951		4	6,591	3	149,391	68	54,924	25	219,694
1952		20	40	0	47,945	65	11,064	15	73,801
1953	209,138	45	121,354	26	130,256	28	6,000	1/	466,748
1954	389,078	28	972,674	70	27,798	2	370	0/	1,389,920
1955	6,329	17	10,053	27	10,053	27	10,797	29	37,232
1956	323,708	68	133,282	28	19,062	4	490	0/	476,542
1957	3,826,261	76	755,183	15	201,382	4	251,728	5	5,034,554
1958	168,106	53	50,671	16	95,258	30	1,825	1-	315,860
Av.	549,574	49	303,214	27	84,828	8	181,514	16	1,119,130

Source: Percentages from coded IBM runs from individual fire reports.
Total acreages from Annual Reports of the Director, Bureau of Land Management (Statistical Appendix).
Other acreages computed from above sources.

Table 42.--Frequency of all fires for each month of the fire season by size class

(Av. 1950-58)

Size class	April		May		June		July		August		September		October		November		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
								Lightning fires										
A			2	14	19	8	20	10	3	8	2	50					46	9
B			1	7	39	15	38	19	9	23	1	25					88	23
C			4	29	59	23	50	24	6	15							119	17
D			2	14	27	11	16	8	2	5	1	25					47	9
E			5	36	110	43	79	39	19	49							214	42
Total			14	100	254	100	203	100	39	100	4	100					514	100
percent per month				3		49		39		8		1						
								Man-caused										
A	29	52	153	34	199	27	161	55	109	69	64	56	2	22	1	14	718	49
B	11	20	159	36	108	50	72	25	21	13	27	24	2	22	2	29	402	27
C	7	12	80	18	48	12	22	8	15	10	11	10	2	22	1	14	186	13
D	1	2	21	5	14	4	13	5	2	1	1	1	1	11			53	3
E	8	14	32	7	28	7	24	7	11	7	10	9	2	22	3	43	118	8
Total	56	100	445	100	397	100	292	100	158	100	113	100	9	100-	7	100	1,477	100
percent per month		4		30		27		19		11		8		1		0+		
								Total fires										
A	29	52	155	34	218	33	181	37	112	57	66	56	2	22	1	14	764	38
B	11	20	160	35	147	23	110	22	30	15	28	24	2	22	2	29	490	25
C	7	12	84	18	107	17	72	14	21	11	11	9	2	22	1	14	305	15
D	1	2	23	5	41	6	29	6	4	2	2	2	1	11			100	5
E	8	14	37	8	138	21	103	21	30	15	10	9	2	22	3	43	332	17
Total	56	100	459	100	651	100	495	100	197	100	117	100	9	100-	7	100	1,991	100
percent per month		3		23		33		25		10		6		0+		0+		

Source: Actual tally of all available individual fire reports (289 less than official count).

Table 43 --Acreage burned by months and causes, 1950-58

Year	April	May	June	July	August	September	October	November	Total
				Lightning					
1950		303,775	29,651	12,607	22,080				368,113
1951			4,107	30,116	151				34,374
1952			14,289	1,020	4				15,313
1953		381	245,178	124,243	4,945				374,747
1954		4,203	1,249,376	79,573	22,956	3			1,356,111
1955			14,374	6,154	3,382				23,910
1956			450,823	6,222					457,045
1957		4,753	3,420,608	1,341,450	61,513	910			4,829,234
1958		140	196,341	45,832	479				242,792
Av. acres burned		34,806	624,972	183,024	12,834	101			855,737
Percent of lightning fires		4.1	73.0	21.4	1.5				100.0
Percent of all fires		3.1	55.8	16.4	1.1				76.4
				Man-caused					
1950	82	1,471,808	45,888	86,474	34,942	35,758	123	14,629	1,689,704
1951	146	97,033	4,671	55,214	26,238	2,018			185,320
1952		270	57,251	63	127	3	774		58,488
1953	2,257	22,028	20,229	43,526	367		3,594		92,001
1954	30	17,082	1,014	750	14,932	1			33,809
1955	10	1,765	2,729	8,721	51	46			13,322
1956		343	9,047	10,106		1			19,497
1957		4,646	3,723	193,267	110	3,574			205,320
1958	6,754	34,361	11,289	20,406	137	121			73,068
Av. acres burned	1,031	183,260	17,316	46,503	8,545	4,614	499	1,625	263,393
Percent of man-caused fires	0.4	69.6	6.6	17.7	3.2	1.7	0.2	0.6	100.0
Percent of all fires	0.1	16.4	1.5	4.2	0.8	0.4	.0	0.2	23.6
				All fires					
Av. acres burned	1,031	218,065	642,287	229,527	21,379	4,715	499	1,625	1,119,130
Percent of all fires	0.1	19.5	57.5	20.5	1.9	0.4	.0	0.1	100.0

Source: Coded IBM runs from individual fire reports, adjusted to the official totals.
(1957 from summary sheets of Area 4).
Totals from Annual Reports of the Director, BLM (Statistical Appendix).

Table 44.--Estimated damage from forest fires on lands protected by Bureau of Land Management, 1950-58

Year	Place	Tangible damage			Intangible damage			Total
		Timber	Brush	Grass		Other		
1950	Alaska	$3,289,979	$1,488,183	$976,367		$2,000,000		$7,754,529
	Other states	52,507	115,470	66,924		1,882		236,783
1951	Alaska	425,420	160,000	192,747		10,000		788,167
	Other states	429,210	214.161	154,371		3,384		801,126
1952	Alaska	73,472	14,538	6,728		35,256		129,994
	Other states	212,017	272,158	128,218		-		612,393
1953	Alaska	876,571	150,955	7,424		82,902		1,117,852
	Other states	835,889	214,284	191,705		1,972		1,243,850
		Timber	Repro-duction	Forage	Watershed	Wildlife	Recrea-tion	
1954	Alaska	990,534	-	500	$ 536,418	1,331,965	$ 1,503	2,860,920
	Other states	90,881	12,601	439,467	146,820	8,384	-	698,153
1955	Alaska	6,430	169	36	29,038	30,587	15,899	82,159
	Other states	6,962	6,399	105,861	408,878	4,865	1,102	534,067
1956	Alaska	112,797	10	2,216	328,770	285,838	847	730,478
	Other states	55,418	21,772	18,681	241,487	11,925	1,251	350,534
1957	Alaska	2,508,724	3,781	274,808	2,311,253	2,506,080	121,406	7,726,052
	Other states	96,178	10,133	162,600	3,045,114	13,191	515	3,327,731
1958	Alaska	403,892	2,452	58,846	355,304	312,645	307,997	1,441,136
	Other states	57,266	6,430	328,137	3.635,495	71,977	4,695	3,104,000

Source: Annual Reports of the Director, Bureau of Land Management (Statistical Appendix).

Table 45 .--Summary of damage in dollars

(Av. 1950-58)

Place	Tangible		Intangible		Total	Average
	Dollars	$/Mil A	Dollars	$/Mil A	Dollars	$/Mil A
Alaska	$12,027,579	$53,456	$10,603,708	$47,128	$22,631,287	$100,584
Other states	4,305,700	31,201	7,602,937	55,094	11,908,637	86,294
Total	$16,333,279		$18,206,645		$34,539,924	
Average		$44,995		$50,156		$ 95,151

Source: Annual reports of the Director, BLM (Statistical Appendix).

Table 46.--Number of fires in each cost class by month and year

(Av. 1950-58)

Year	$25 or less	$26-$300	$301-$1,000	$1,001-$5,000	$5,001-$10,000	$10,001-$20,000	$20,001-$40,000	$40,001-$60,000	$60,001-$80,000	$80,000/
April										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Year	$25 or less	$26-$300	$301-$1,000	$1,001-$5,000	$5,001-$10,000	$10,001-$20,000	$20,001-$40,000	$40,001-$60,000	$60,001-$80,000	$80,000/
August										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
September										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
October										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]										
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Summary by cost class and year

Year	$25 or less	$26-$300	$400-$1,000	$1,001-$5,000	$5,001-$10,000	$10,001-$20,000	$20,001-$40,000	$40,001-$60,000	$60,001-$80,000	$80,000/	Total number of fires
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Summary by cost class and month

Month	[illegible]	[illegible]	$301-$1,000	$1,001-[illegible]	$5,001-$10,000	$10,001-$20,000	$20,001-$40,000	$40,000-$60,000	$60,001-$80,000	$80,000/	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Table 47.--Number of fires according to time from origin to discovery

Final size class	Time in hours: 0 - 1		1 - 2		2 - 3		3 - [illegible]		[illegible] - 12		12 - 24		24 - 48		48 - 72		72 +		Total	
	Fuel type 1/																			
	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other
May																				
A	24	[illegible]	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2	7	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	59	49
B	29	28	9	3		[illegible]	10	4	5	1	2	2	2	[illegible]	1	[illegible]	1	4	[illegible]	[illegible]
C	10	10	6	1	[illegible]	2	[illegible]	4	3	[illegible]	[illegible]	[illegible]	2	4	2	[illegible]	2	2	[illegible]	27
D	3	1	1	1	1	[illegible]	[illegible]	1	[illegible]	[illegible]	1	1	2	1	1	[illegible]	[illegible]	1	9	[illegible]
E	2	2	4	4	[illegible]	0	2	1	1	2	2	1	1	[illegible]	[illegible]	[illegible]	1	1	13	11
Total	68	67	[illegible]	13	10	[illegible]	20	15	12	[illegible]	12	7	9	9	[illegible]	1	9	11	174	[illegible]
June																				
A	30	24	5	4	5	7	5	[illegible]	5	[illegible]	15	7	[illegible]	1	[illegible]	[illegible]	3	2	78	57
B	25	[illegible]	1	5	5	4	6	4	5	4	7	3	9	[illegible]	[illegible]	[illegible]	4	3	79	34
C	18	4	2	3	5	1	4	5	5	[illegible]	[illegible]	5	2	3	1	[illegible]	5	1	47	24
D	7	5	2		1	[illegible]	[illegible]	2	1	1	5	2	[illegible]	4	2	[illegible]		2	[illegible]	[illegible]
E	1	6	[illegible]	[illegible]	[illegible]	1	[illegible]	3	[illegible]		2	2	[illegible]	3		[illegible]		[illegible]	2	17
Total	[illegible]	47	19	[illegible]	[illegible]	[illegible]	15	22	16	[illegible]	29	19	17	14	9	2	12	[illegible]	214	[illegible]
July																				
A	36	9	9	7	4	2	11	4	6	1	17	[illegible]	10	2	[illegible]	[illegible]	7	[illegible]	[illegible]	[illegible]
B	16	10	[illegible]	3	1	3	6	2	3	3	6	2	7	4			5	1	[illegible]	[illegible]
C	6	6	3	[illegible]	2	3	9	3	1	2	1	2	3	5	2	1	4		31	[illegible]
D	0	3	1	[illegible]	[illegible]	1	1	2		[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	6	[illegible]
E	5	3	[illegible]	2	4	2	7	2	[illegible]	[illegible]	9	2	2	2	2	[illegible]	2	1	37	14
Total	33	31	27	15	11	11	33	17	9	[illegible]	32	6	24	13	9	3	20	3	225	[illegible]
August																				
A	13	5	5	1	[illegible]	2	7	2	5	2	15	1	5	2	4	1	5	2	64	[illegible]
B	5	1	1	0	1	1	1	2	2	1	2	0	4	3	1	[illegible]	2	1	19	9
C	1	2	1	0	0	0	2	2	[illegible]	1	0	1	2	1	[illegible]	0	2	1	5	8
D	2	0	0	0	[illegible]	0	0	0	0	0	0	[illegible]	1	0	0	0	0	0	3	0
E	2	1	1	0	[illegible]	0	1	0	0	[illegible]	[illegible]	1	[illegible]	0	1	1	3	1	5	4
Total	23	9	8	1	[illegible]	3	11	6	7	4	17	3	12	6	[illegible]	2	12	5	102	39
Summary																				
A	103	64	27	[illegible]	17	[illegible]	[illegible]	19	[illegible]	[illegible]	54	11	23	[illegible]	15	4	[illegible]	[illegible]	305	[illegible]
B	75	47	28	11	13	11	22	12	15	9	12	7	22	13	4	[illegible]	12	9	203	[illegible]
C	35	22	12	7	7	6	15	14	9	[illegible]	6	6	9	13	5	2	13	4	124	[illegible]
D	12	9	4	1	2	1	[illegible]	5	1	1	6	3	5	5	[illegible]	[illegible]	2	3	36	[illegible]
E	10	12	11	7	4	3	10	6	1	3	12	[illegible]	3	8	3	3	6	3	[illegible]	[illegible]
Total	235	154	[illegible]	42	43	37	79	[illegible]	44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	27	715	[illegible]

1/ 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

Source: Coded IBM runs from individual fire reports based on 1,149 fires.

Table 48.--Percent of fires according to time from origin to discovery within each size class and fuel type

(Av. 1950-58)

Final size class	0 - 1		1 - 2		2 - 3		3 - 6		6 - 12		12 - 24		24 - 48		48 - 72		72-		Total	
	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other
										May										
A	41.7	33.1	13.5	8.2	5.1	10.2	5.5	10.2	5.1	4.1	11.5	6.1	3.4	2.0	3.4	0	3.5	2.1	100.0	100.0
B	44.7	56.3	13.6	3.3	9.2	6.3	15.4	8.3	7.7	2.1	3.1	4.2	3.1	6.2	1.5	0	1.5	3.3		
C	35.7	37.0	21.4	3.7	0	7.4	10.7	14.3	10.7	11.1	0	0	7.1	14.8	7.2	3.7	7.2	7.4		
D	33.3	16.7	11.1	16.7	11.1	0	0	16.7	0	0	11.1	16.7	22.2	16.6	11.2	0	0	16.6		
E	15.4	18.2	30.8	36.4	0	0	15.4	9.1	7.7	18.1	15.4	9.1	7.7	0	0	0	7.6	9.1		
										June										
A	35.5	42.1	5.4	7.0	5.4	12.2	6.5	14.0	8.4	5.3	19.2	12.3	7.7	1.8	5.1	1.8	3.8	3.5		
B	37.2	23.5	14.6	14.7	7.3	11.5	5.7	11.5	7.3	11.5	4.3	5.8	13.0	5.8	2.9	0	5.8	5.8		
C	33.3	16.7	4.3	12.6	10.7	4.2	6.3	20.8	10.6	8.3	10.8	20.8	4.2	12.6	2.1	0	10.6	4.2		
D	38.9	31.2	11.1	0	5.2	0	0	12.6	5.6	6.2	27.8	12.6	0	25.1	11.1	0	0	12.5		
E	50.0	35.3	0	5.9	0	5.9	0	17.6	0	0	50.0	11.8	0	17.6	0	5.9	0	0		
										July										
A	34.7	32.2	6.7	25.0	3.5	7.1	10.6	14.3	4.5	3.6	16.3	0	9.8	7.1	4.8	7.1	6.7	3.6		
B	32.0	35.8	16.0	10.7	2.0	10.7	10.0	7.1	6.0	10.7	10.0	7.1	14.0	14.3	0	0	10.0	3.6		
C	19.4	24.0	9.8	12.0	6.4	12.0	29.0	12.0	3.2	8.0	3.2	8.0	9.7	20.0	6.4	4.0	12.9	0		
D	0	50.0	16.7	0	0	16.7	16.7	33.3	0	0	0	0	33.3	0	0	0	33.3	0		
E	13.5	21.4	16.2	14.3	10.8	14.3	18.9	14.3	0	0	24.3	14.3	5.4	14.3	5.4	0	5.5	7.1		
										August										
A	21.4	27.8	7.9	5.6	7.8	11.1	10.9	11.1	7.8	11.1	23.4	5.5	7.8	11.1	6.2	5.6	7.8	11.1		
B	26.3	11.1	5.3	0	5.3	11.1	5.3	22.3	10.5	11.1	10.5	0	21.0	33.3	5.3	0	10.5	11.1		
C	12.5	25.0	12.5	0	0	0	25.0	25.0	0	12.5	0	12.5	25.0	12.5	0	0	25.0	12.5		
D	66.7	0	0	0	0	0	0	0	0	0	0	0	33.3	0	0	0	0	0		
E	25.0	25.0	12.5	0	0	0	12.5	0	0	0	0	25.0	0	0	12.5	25.0	37.5	25.0		
										Summary										
A	33.5	42.1	5.8	10.5	5.5	10.5	9.2	12.0	6.9	6.3	17.7	7.2	7.5	3.9	4.9	2.6	3.8	5.4	100.0	100.0
B	36.9	39.5	13.8	9.2	6.4	9.2	10.6	10.1	6.6	7.6	5.9	6.9	10.6	10.9	5.0	0	5.9	7.6		
C	30.7	26.2	10.5	5.3	5.1	7.1	15.5	16.7	7.9	9.5	5.3	9.5	7.9	15.5	4.4	2.4	11.4	4.5		
D	36.6	[illegible]	11.1	3.3	5.5	3.3	2.8	16.7	2.8	3.3	[illegible]	16.7	13.9	16.7	8.3	0	5.6	10.0		
E	15.7	26.1	16.3	15.2	4.7	6.6	16.3	13.0	1.7	4.3	20.0	13.0	5.0	10.9	5.0	4.3	10.0	6.6		

1 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

Source: Coded IBM runs from individual fire reports based on 1,143 fires

Table 49.--Percent of fires according to time from origin to discovery within each time class and fuel type

(Av. 1950-58)

Final size class	Time in hours: 0 - 1		1 - 2		2 - 3		3 - 6		6 - 12		12 - 24		24 - 48		48 - 72		72+	
	Fuel type 1/: Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other
									May									
A	35.3	38.8	28.6	30.8	30.0	50.0	25.0	33.3	25.0	25.0	58.3	42.8	22.2	11.1	33.3	0	55.6	27.3
B	42.7	41.8	32.1	23.0	60.0	30.0	50.0	26.6	41.7	12.5	16.7	28.6	22.2	33.4	16.7	0	11.1	36.4
C	14.7	14.9	21.4	7.7	0	20.0	15.0	26.7	25.0	37.5	0	0	22.2	44.4	33.3	100	22.2	18.1
D	4.4	1.5	3.6	7.7	10.0	0	0	6.7	0	0	8.3	14.3	22.2	11.1	16.7	0	0	9.1
E	2.9	3.0	14.3	30.8	0	0	10.0	6.7	8.3	25.0	16.7	14.3	11.2	0	0	0	11.1	9.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
									June									
A	37.1	51.1	26.4	30.8	31.3	53.8	33.3	36.4	31.2	30.0	51.7	36.8	35.3	7.1	44.4	50.0	25.0	25.0
B	30.9	17.0	52.6	38.5	31.3	30.8	40.0	18.2	31.2	40.0	10.3	15.8	52.9	21.4	22.2	0	33.3	37.5
C	22.2	8.5	10.5	23.0	31.2	7.7	26.7	22.7	31.2	20.0	17.3	26.4	11.8	21.4	11.2	0	41.7	12.5
D	8.6	10.6	10.5	0	6.2	0	0	9.1	6.4	10.0	17.3	10.5	0	28.7	22.2	0	0	25.0
E	1.2	12.8	0	7.7	0	7.7	0	13.6	0	0	3.4	10.5	0	21.4	0	50.0	0	0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
									July									
A	57.2	29.0	33.3	46.7	36.4	18.2	33.3	30.8	55.6	16.7	53.1	0	41.7	15.4	55.6	66.7	35.0	33.4
B	25.4	32.2	29.7	20.0	9.1	27.3	15.2	15.4	33.3	50.0	15.6	33.4	29.2	30.8	0	0	25.0	33.3
C	9.5	19.4	11.1	20.0	18.1	27.2	27.3	23.0	11.1	33.3	3.2	33.3	12.5	38.4	22.2	33.3	20.0	0
D	0	9.7	3.7	0	0	9.1	3.0	15.4	0	0	0	0	8.3	0	0	0	10.0	0
E	7.9	9.7	22.2	13.3	36.4	18.2	21.2	15.4	0	0	28.1	33.3	8.3	15.4	22.2	0	10.0	33.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
									August									
A	56.5	55.6	62.5	100	83.3	66.7	63.6	33.4	71.4	50.0	88.2	33.4	41.7	33.3	66.7	50.0	41.6	40.0
B	21.7	11.1	12.5	0	16.7	33.3	9.1	33.3	28.6	25.0	11.8	0	33.3	50.0	16.6	0	16.7	20.0
C	4.4	22.2	12.5	0	0	0	18.2	33.3	0	25.0	0	33.3	16.7	16.7	0	0	16.7	20.0
D	8.7	0	0	0	0	0	0	0	0	0	0	0	8.3	0	0	0	0	0
E	8.7	11.1	12.5	0	0	0	9.1	0	0	0	0	33.3	0	0	16.7	50.0	25.0	20.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
									Summary									
A	43.8	41.6	32.9	38.0	39.5	43.2	35.4	33.9	42.8	28.6	60.0	29.7	37.1	14.2	46.9	50.0	37.7	29.6
B	31.9	30.5	34.2	26.2	30.2	29.7	27.8	21.5	31.0	32.1	13.3	18.9	35.5	31.0	18.8	0	22.6	33.3
C	14.9	14.3	14.6	16.7	16.4	16.3	22.8	25.0	21.4	28.6	6.7	21.7	14.5	31.0	15.6	25.0	24.6	14.9
D	5.2	5.8	4.9	2.4	4.6	2.7	1.4	8.9	2.4	3.6	6.7	13.5	8.1	11.9	9.3	0	3.8	11.1
E	4.2	7.8	13.4	16.7	9.3	8.1	12.6	10.7	2.4	7.1	13.3	16.2	4.8	11.9	9.4	25.0	11.3	11.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

Source: Coded IBM runs from individual fire reports, based on 1,149 fires.

Table 50.--Distance to fires from headquarters at Anchorage or Fairbanks[1/]

(Av. 1950-58)

Lightning

Size class	Miles 0-100	101-200	201-300	301+
A	2.9	2.6	0.6	0.1
B	3.4	4.8	1.7	1.4
C	3.6	5.2	2.8	1.9
D	.9	1.9	.9	1.7
E[2/]	2.7	6.7	3.8	1.3
E+[3/]	.8	2.4	1.1	.8
Total	14.3	23.6	10.9	7.2
Percent	26	42	19	13

Other

Size class	Miles 0-100	101-200	201-300	300+
A	64.0	24.7	6.4	0
B	33.2	12.7	2.2	1.3
C	12.0	6.1	2.2	.4
D	3.9	1.6	.9	.7
E	4.9	2.1	1.4	1.1
E+	.9	1.6	.9	.2
Total	118.9	48.8	14.0	3.7
Percent	64	26	8	2

Action

Size class	Miles 0-100	101-200	201-300	301+
A	66.1	25.6	6.2	0
B	34.3	14.8	3.4	1.7
C	14.2	8.1	3.8	.9
D	4.2	2.7	1.1	1.0
E	6.5	5.8	2.4	1.3
E+	1.2	1.9	.9	.6
Total	126.5	58.9	17.8	5.5
Percent	60	28	9	3

No-action

Size class	Miles 0-100	101-200	201-300	300+
A	0.9	1.7	0.8	0.1
B	2.2	2.7	.4	1.1
C	1.3	3.2	1.2	1.5
D	.6	.8	.7	1.3
E	1.1	3.0	2.8	1.1
E+	.4	2.1	1.1	.4
Total	6.5	13.5	7.0	5.5
Percent	20	41	22	17

All fires

Size class	Miles 0-100	101-200	201-300	301+
A	66.9	27.2	7.0	0.1
B	36.7	17.6	3.9	2.8
C	15.5	11.3	5.0	2.3
D	4.8	3.4	1.8	2.3
E	7.6	8.8	5.2	2.4
E+	1.7	4.0	2.0	1.0
Total	133.2	72.3	24.9	10.9
Percent	55	30	10	5

Fires per million acres

Size class	Miles 0-100	101-200	201-300	300+
A	2.03	0.42	0.12	0.01
B	1.11	.26	.07	.04
C	.47	.17	.09	.03
D	.14	.05	.03	.03
E	.23	.13	.09	.04
E+	.05	.06	.03	.01
Total	4.03	1.09	.43	.16
Percent	70	19	8	3

1/ According to Operations Area in which the fire occurred.
2/ 301-10,000 acres
3/ Over 10,000 acres

Source: Occurrence maps from 2,171 individual fire reports, (109 less than official count)

Table 51.--Number of fires according to time from attack to control

(Av. 1950-58)

Final size class	Time in hours: 0 - 1		1 - 2		2 - 3		3 - 6		6 - 12		12 - 24		24 - 48		48 - 72		72+		Total	
	Fuel type 1/: Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other
May																				
A	16	21	4	2	1	1	1	3											22	27
B	22	24	12	10	8	6	13	5	6	3	2	1	2	1					65	50
C	5	4	3	4	3	5	13	10	8	5	5		1	2			1		39	30
D			1		4	2	5		4		1	1	2				1		18	3
E	1					1	1	1	1	1	2	4	4	1	2	2	1		12	10
Total	44	49	20	16	16	15	33	19	19	9	10	6	9	4	2	2	3		156	120
June																				
A	35	19	4	3	2	1	1	3	1										43	26
B	20	17	12	2	11	5	8	7	9	1	5		3	1			3		71	33
C	4	5	2	5	4	2	11	3	12	3	5	2	6	1	2		1	3	47	24
D		1		3	1	2	1	2	7	5	3	3	1	2	3		4	3	20	21
E	1			1		1		1	4	4	3	4	5	3	5	4	17	9	35	27
Total	60	42	18	14	18	11	21	16	33	13	16	9	15	7	10	4	25	15	216	131
July																				
A	34	17	8	3	2	1	8				1			1		1			53	23
B	13	9	11	4	8	5	8	5	3	2	6	5	4	3		1	3	1	56	35
C	1	2		1		4	6	4	6	4	6	1	3			2	·3	1	25	19
D					1						2	1	3	2				2	6	5
E				1		1	3	1	1	1	2		6	1	2		18	6	32	11
Total	48	28	19	9	11	11	25	10	10	7	17	7	16	7	2	4	24	10	172	93
August																				
A	22	4	4		1	2	2			1									29	7
B	1	1	6	2	2		6	1	3		5	3			1				24	7
C	1		1	1		1					4	1	1	1	1	1	1	3	9	8
D	1								1		1				1				4	0
E									2	1			1		1		3	2	7	3
Total	25	5	11	3	3	3	8	1	6	2	10	4	2	1	4	1	4	5	73	25
Summary																				
A	107	61	20	8	6	5	12	6	1	1	1			1		1			147	83
B	56	51	41	18	29	16	35	18	21	6	18	9	9	5	1	1	6	1	216	125
C	11	11	6	11	7	12	30	17	26	12	20	4	11	4	3	3	6	7	120	81
D	1	1	1	3	6	4	6	2	12	5	7	5	6	4	4		5	5	48	29
E	2			2		3	4	3	8	7	7	8	16	5	10	6	39	17	86	51
Total	177	124	68	42	48	40	87	46	68	31	53	26	42	19	13	11	56	30	617	369

1/ 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

Source: IBM runs from individual fire reports, based on 986 fires.

Table 52.--Percent of fires according to time from attack to control within each size class and fuel type

(Av. 1950-58)

Final size class	Time in hours: 0 - 1		1 - 2		2 - 3		3 - 6		6 - 12		12 - 24		24 - 48		48 - 72		72+		Total	
	Fuel type 1/: Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other
May																				
A	72.7	77.8	18.2	7.4	4.5	3.7	4.6	11.1											100.0	100.0
B	33.8	45.1	18.8	20.0	12.3	12.0	20.0	10.0	9.2	6.0	3.1	2.0	3.1	2.0						
C	12.8	13.3	7.7	13.3	7.7	16.7	33.3	33.3	20.5	16.7	12.8		2.6	6.7			2.6			
D			5.6		22.1	66.7	27.8		22.2		5.6	33.3	11.1				5.6			
E	5.3					10.0	8.4	10.0	8.3	10.0	16.7	40.0	33.3	10.0	16.7	20.0	8.3			
June																				
A	61.4	73.1	9.3	11.5	4.6	3.8	2.3	11.6	2.4											
B	28.2	51.8	16.9	6.1	15.5	15.2	11.3	21.2	12.7	3.0	7.0		4.2	3.0			4.2			
C	5.5	20.8	4.3	20.8	8.5	8.3	23.5	12.5	25.5	12.5	10.6	8.3	12.8	4.2	4.2		2.1	12.5		
D		4.8		14.3	5.0	9.5	5.0	9.5	35.0	23.8	15.0	14.3	5.0	9.5	15.0		20.0	14.3		
E	2.8			3.7		3.7		3.7	11.4	14.8	8.6	14.8	14.3	11.1	14.3	14.8	45.6	33.4		
July																				
A	64.2	73.9	15.0	13.0	3.8	4.3	15.1				1.9			4.4		4.4				
B	23.2	25.7	19.8	11.4	14.3	14.3	14.3	14.3	5.4	5.7	10.7	14.3	7.1	8.6		2.9	5.4	2.8		
C	4.0	10.5		5.2		21.1	24.0	21.0	24.0	21.1	24.0	5.3	12.0			10.5	12.0	5.3		
D					16.7						33.3	20.0	50.0	40.0				40.0		
E				9.1		9.1	9.4	9.1	3.1	9.1	6.2		18.8	9.1	6.3		56.2	54.5		
August																				
A	75.9	57.1	13.8		3.4	28.6	6.9			14.3										
B	1.2	14.3	28.0	28.6	8.3		25.0	14.3	12.5		20.8	42.8			4.2					
C	11.1		11.1	12.5		12.5					44.4	12.5	11.1	12.5	11.1	12.5	11.2	37.5		
D	25.0								25.0		25.0				25.0					
E									28.6	33.3			14.3		14.3		42.8	66.7		
Summary																				
A	72.8	74.8	13.5	9.8	4.1	6.0	8.2	7.2	.7	1.2	.7			1.2		1.2			100.0	100.0
B	25.5	47.8	10.1	14.4	13.4	12.8	16.2	14.4	9.7	4.8	8.3	7.2	4.2	4.0	.5	.5	2.6	.5		
C	9.2	13.7	5.0	13.8	5.7	14.7	25.0	21.0	21.7	14.4	16.7	4.9	9.2	4.9	2.5	3.7	5.0	3.8		
D	2.1	3.4	3.1	11.3	12.5	13.9	12.6	6.9	25.0	17.3	14.6	17.2	12.5	17.3	8.3		10.4	17.2		
E	2.3			3.3		6.9	4.2	6.9	9.3	13.7	5.1	13.7	16.7	9.8	11.8	11.8	45.4	33.3		

1/ 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

Source: Coded IBM runs from individual fire reports, based on 986 fires.

Table 53 .--Percent of fires according to time from attack to control within each time class and fuel type

Final size class	Time in hours																	
	0 - 1		1 - 2		2 - 3		3 - 6		6 - 12		12 - 24		24 - 48		48 - 72		72+	
	Fuel Types 1/																	
	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other	Spruce	Other
	May																	
A	36.4	42.8	20.0	12.5	6.2	6.7	3.0	15.8										
B	50.0	49.0	60.0	62.5	50.0	40.0	39.4	26.3	31.6	33.3	20.0	16.6	22.3	25.0				
C	11.4	8.2	15.0	25.0	18.8	33.3	39.4	52.6	42.1	55.6	50.0		11.1	50.0			33.4	
D			5.0		25.0	13.3	15.2		21.0		10.0	16.7	22.2				33.3	
E	2.2					6.7	3.0	5.3	5.3	11.1	20.0	66.7	44.4	25.0	100	100	33.3	
	June																	
A	58.3	45.2	22.2	21.4	11.1	9.1	4.8	18.8	3.0									
B	33.3	40.5	66.7	14.3	61.1	45.4	38.1	43.8	27.3	7.7	31.2		20.0	14.3			12.0	
C	6.7	11.9	11.1	35.8	22.2	18.2	52.4	18.7	36.4	23.1	31.2	22.3	40.0	14.3	20.0		4.0	20.0
D		2.4		21.4	5.6	18.2	4.7	12.5	21.2	38.5	16.8	33.3	6.7	23.6	30.0		16.0	20.0
E	1.7			7.1		9.1		6.2	12.1	30.7	18.8	44.4	33.3	42.8	50.0	100	68.0	60.0
	July																	
A	70.8	60.8	42.1	33.3	18.2	9.1	32.0				5.9			14.3		25.0		
B	27.1	32.1	57.9	44.5	72.7	45.4	32.0	50.0	30.0	28.6	35.2	71.4	25.0	42.8		25.0	12.5	10.0
C	2.1	7.1		11.1		36.4	24.0	40.0	60.0	57.1	35.3	14.3	18.8			50.0	12.5	10.0
D					9.1						11.8	14.3	18.8	28.6				20.0
E				11.1		9.1	12.0	10.0	10.0	14.3	11.8		37.4	14.3	100		75.0	60.0
	August																	
A	88.0	80.0	36.4		33.3	66.7	25.0			50.0								
B	4.0	20.0	54.5	66.7	66.7		75.0	100	50.0		50.0	75.0			25.5			
C	4.0		9.1	33.3		33.3					40.0	25.0	50.0	100	25.5	100	25.0	60.0
D	4.0								16.7		10.0				25.5			
E									33.3	50.0			50.0		25.5		75.0	40.0
	Summary																	
A	60.5	49.2	29.4	19.0	12.5	12.5	13.8	13.0	1.5	3.2	1.9			5.4		9.1		
B	31.6	41.1	60.3	42.8	60.4	40.0	40.2	39.2	30.9	19.4	34.0	34.6	21.4	26.3	5.5	9.1	10.8	3.3
C	6.2	8.9	8.8	26.3	14.6	30.0	34.5	37.0	38.2	38.7	37.7	15.4	26.2	21.0	16.7	27.3	10.7	23.3
D	.6	.8	1.5	7.1	12.5	10.0	6.9	4.3	17.6	16.1	13.2	19.2	14.3	21.0	22.2		8.9	16.7
E	1.1			4.8		7.5	4.6	6.5	11.8	22.6	13.2	30.8	38.1	26.3	55.6	54.5	69.6	56.7
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

1/ 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

Source: Coded IBM runs from individual fire reports, based on 986 fires.

Table 54.--Forward behavior of fire at time of arrival by percent within each characteristic class and between size classes

(Av. 1950-58)

Final size class	Smoldering		Creeping		Running		Spotting	Crowning
	Fuel type[1]							
	Spruce	Other	Spruce	Other	Spruce	Other	Spruce[2]	Spruce[2]
	May (159 fires)							
A	56.0	41.7	21.6	35.0	4.0	31.9	0	0
B	36.0	33.3	37.9	35.0	52.0	40.9	66.7	66.7
C	4.0	25.0	29.7	20.0	24.0	9.1	33.3	0
D	4.0	0	8.1	0	4.0	4.5	0	4
E	0	0	2.7	10.0	16.0	13.6	0	33.3
	June (266 fires)							
A	60.6	60.5	24.4	24.0	17.1	8.0	25.0	3.1
B	23.0	18.2	43.9	32.0	29.2	8.0	12.5	18.8
C	8.2	6.1	19.5	20.0	19.5	24.0	25.0	18.8
D	3.3	9.1	4.9	12.0	9.8	16.0	12.5	12.5
E	4.9	6.1	7.3	12.0	24.4	44.0	25.0	46.8
	July (232 fires)							
A	80.0	40.8	35.7	20.0	10.3	15.8	50.0	14.3
B	9.2	25.9	38.1	44.0	48.3	21.0	0	4.8
C	7.7	22.2	7.1	20.0	20.7	31.6	0	14.3
D	0	7.4	4.8	0	0	5.3	25.0	9.5
E	3.1	3.7	14.3	16.0	20.7	26.3	25.0	57.1
	August (87 fires)							
A	76.5	66.7	56.3	20.0	14.3	0	0	0
B	20.6	25.0	31.2	40.0	42.9	20.0	100	33.3
C	2.9	8.3	12.5	40.0	42.8	60.0	0	66.7
D	0	0	0	0	0	20.0	0	0
E	0	0	0	0	0	0	0	0
	Summary all months (744 fires)							
A	69.8	51.1	30.9	25.3	11.8	16.9	25.0	6.8
B	19.4	25.0	39.0	27.4	41.2	22.5	25.0	16.9
C	6.5	15.6	17.6	21.3	22.5	23.9	18.7	18.7
D	1.6	5.2	5.1	4.0	4.9	9.9	12.5	10.2
E	2.7	3.1	7.4	12.0	19.6	26.8	18.8	47.4

1/ 'Spruce' type consists of Spruce, spruce-hardwood.
'Other': Broadleaf, reproduction, brush, grass, tundra, muskeg.

2/ Only scattered occurrences of spotting and crowning occur in the fuel type 'Other' since it is composed mostly of grass, tundra, and brush.

Source: Coded IBM runs from individual fire reports.

Table 55.--Cost of protection by Bureau of Land Management, 1950-58[1/]

Year	Cost of protection in dollars			Cost/acre (fraction of cent)	
	Pre-suppression	Suppression	Total	Alaska	Other states
1950	143,529	6,422	149,951	0.07	0.34
1951	194,023	89,139	283,162	.12	.15
1952	198,316	157,946	356,262	.16	.21
1953	210,003	180,588	390,591	.17	.18
1954	230,695	275,718	506,413	.22	.19
1955	247,324	239,941	487,265	.22	.21
1956	287,813	152,653	440,466	.20	.33
1957	294,911	584,000	878,911	.39	.30
1958	395,551	1,875,643	2,271,194	1.01	.80
Av.	244,685	395,783	640,491		

Percent of acreage protected and total protection costs

(Av. 1950-58)

Place	Pre-suppression	Suppression	Total Cost	Acreage
Alaska	66	60	62	62
Other states	34	40	38	38

1/ Fiscal Year Data. Based on 225 million acres protected. Does not include contract protection costs.

Source: Annual Reports of the Director, BLM (Statistical Appendix).