Compulsory Pilotage ... ... Pribilof Islands Area

MEMORANDUM

TO: Alaska Board of Marine Pilots
FROM: Alaska Marine Pilots
RE: Compulsory Pilotage in the Pribilof Islands Area
DATE: April 1, 1992

This memorandum presents the view of Alaska Marine Pilots ("AMP") respecting the need for compulsory pilotage in the Pribilof Islands (St. Paul and St. George) and nearby St. Matthew Island. (Even though St. Matthew Island is not considered one of the Pribilof Island groups, for convenience of discussion in this presentation AMP includes it in the Pribilofs.)

With this memorandum, AMP provides to the Board all the information it has been able to gather to date. If AMP is able to gather additional relevant information, it will provide it to the Board as soon as possible.

SUMMARY: The law requires the Alaska Board of Marine Pilots ("the Board") to designate compulsory pilotage in the State of Alaska if necessary to protect shipping, human life and property, and the marine environment. On the evidence outlined in this presentation, AMP believes the statutory criteria require the Board to create a compulsory pilotage zones to the full extent of the three-mile territorial sea surrounding the Pribilofs and St. Matthew Island. AMP asks the Board to do so by adding a new subsection to 12 AAC 56.100.

I. LEGAL AUTHORITY AND DUTY OF THE BOARD

AS 08.62.040(a)(1) provides that the Board shall

> provide for the maintenance of efficient and competent pilotage services on the inland and coastal water of an adjacent to the state to assure the protection of shipping, the safety of human life and property, and the protection of the marine environment.

AS 08.62.160 provides: "The board **shall** define the mandatory pilotage water of the state." (Emphasis added.)

Pursuant to this authority, the Board has adopted regulations governing compulsory pilotage waters, 12 AAC 56.090 througn .120. Section .090 establishes a general rule for determining the boundaries of the compulsory pilotage waters of Alaska; this is a "default" provision which covers all waters "not otherwise described in this chapter."

Section .100 establishes certain specific boundaries of compulsory pilotage waters. AMP is requesting the Board to add the three-mile territorial sea surrounding the Pribilofs and St. Matthew Island to this section.

Three aspects of AS 08.62.040(a)(1) are germane to this presentation. First, this provision together with AS 08.62.160 makes it clear that it is the duty of the Board to designate compulsory pilotage waters in Alaska. Contrary to the suggestion of Board Member Bill Lorch at the Board's January 1992 meeting, the Board cannot and should not defer to local governments to make this determination. The Board certainly may consider the opinions of local government officials to the extent these opinions bear on appropriate criteria, but the ultimate decision can only be made by the Board.

The second important aspect of Section .040(a)(1) is that it expressly defines the waters that fall within the Board's jurisdiction: "the inland and coastal waters of and adjacent to the state." (Emphasis added.) This is a change from the prior statute, in which .040(a)(1) described "all waters covered by this chapter." Clearly, the waters around any Alaskan island are "coastal" waters "adjacent" to the state. There can be no doubt that the Board has authority to designate compulsory pilotage waters to the full extent of the three-mile territorial sea surrounding any Alaskan island, if the statutory criteria are met.

The third important element of Section .040(a)(1) provides the criteria to be applied by the Board in making this decision: "protection of shipping, the safety of human life and property, and the protection of the marine environment." Protection of the marine environment is a new criterion added to the statute by the 1991 legislation. This is critically important in the context of the Pribilofs, because the marine environment in that region is particularly rich and sensitive.

These are the only criteria the Board may consider in evaluating whether to designate compulsory pilotage waters in the Pribilofs. Contrary to suggestions by witnesses and some Board

members at the Board's January 1992 meeting, the Board may not properly consider the economic impact of compulsory pilotage either on local governments or on the shipping or fishing industries. If economic considerations were to play a part in establishing compulsory pilotage, there would be no compulsory pilotage anywhere in the State of Alaska. If safety considerations compel establishing compulsory pilotage in a particular area, then the cost of such pilotage to industry is irrelevant.

Other witnesses at the Board's January meeting argued against compulsory pilotage because of the logistical problems that might arise in getting pilots to and from vessels. That is also an improper consideration, unless it bears directly on the three statutory criteria. If the logistics objection is purely economic, the Board cannot consider it. Everywhere in the world, logistical problems of getting pilots to and from ships are solved in one way or another, and everywhere in the world industry must bear the cost of compulsory pilotage if such pilotage is deemed necessary. In this respect, the Pribilofs are no different from anyplace else in Alaska or rest of the world.

Still other witnesses suggested that pilots are unnecessary in the Pribilofs because the masters of the foreign vessels operating there were the most skilled in the world at "high seas" dockings. This assertion, even if true, is irrelevant. The statute does not permit the Board to consider the expertise of foreign masters in deciding whether to require compulsory pilotage.

The very reason for establishing a system of compulsory pilotage is to ensure that vessels operating in state waters are under the control of someone with proper training and local knowledge and experience. The state has no way of knowing the training and experience of a foreign ship master, or whether he is sober and drug-free, or whether he is proficient in English. None of the state's requirements for a licensed pilot apply to foreign masters. In the absence of a licensed pilot, the state has no way of knowing whether the vessel even has adequate charts (see Statement of Capt. David Sanders, attached hereto as Exhibit A, entry for January 31, 1992, at 1500 hours: vessel operating near St. Paul without adequate charts).

The Board must designate compulsory pilotage waters in the Pribilofs if it determines that it is necessary to protect shipping, the safety of human life and property, and protection of the marine environment. This is a non-delegable duty. AMP believes that the situation in the Pribilofs and St. Matthew Island require imposition of a compulsory pilotage zone.

In passing, AMP notes that if this Board does not impose compulsory pilotage in that area, the federal government has the authority to do so. The Secretary of Transportation may require a federal pilot for any self-propelled vessel when pilots are not required by state law and the vessel is both engaged in foreign commerce and operating on navigable waters of the United States. 46 USC 8503(a). This provision would cover a good deal of the vessel traffic in the Pribilofs.

II. FACTUAL BASIS FOR IMPOSING COMPULSORY PILOTAGE IN THE PRIBILOFS

A. Geography and weather.

The Pribilof Islands are located in the Bering Sea approximately 200 miles northwest of Unimak Pass. Under good weather and sea conditions, it is approximately one day's steaming time from Dutch Harbor. St. Matthew is approximately 200 miles north-northwest of the Pribilofs, about 145 miles west of Nunivak Island.

Because of its geography, the weather and sea conditions in the region are among the worst in the world. These islands lie exposed to hundreds of miles of open ocean, allowing seas and weather to build up over a considerable distance without obstruction. During winter, the islands are within the boundaries of the ice pack, and the presence of ice in winter is frequently a factor in vessel movements.

Attached hereto as Exhibit B is an excerpt from the United States Coast Pilot, Vol. 9 (15th Ed. 1992), describing the area. AMP points out some specific points mentioned in the Coast Pilot about the Pribilofs:

> Fogs are especially thick and prevalent in this vicinity in the summer, and navigation is attended with difficulty and danger. . . . One annoying characteristic of the area is very thick fog accompanying strong winds. . . . Winds do not continue to blow from the same quarter for any length of time. . . . After September 1, gales are frequent and violent, and blow from all directions. . . . The Pribilofs are near the S limit of the ice in Bering Sea.

> Frequent windy periods are characteristic of the (St. Paul Island) area throughout the year. Frequent storms occur from October to April, and they are often accompanied by gale force winds to produce blizzard conditions.

The Coast Pilot has little to say about St. Matthew Island, but what it does say offers a suggestion of the perils of navigation there:

> St. Matthew Island and adjoining islands . . . are rocky, uninhabited islands whose shores are poorly charted except for a small area between Sugarloaf Mountain and Pinnacle Island. . . . During the season of navigation, fog is prevalent in this vicinity.

The shortage of soundings and other information is readily apparent from an examination of NOAA's navigation chart No. 514, which is the only navigation chart that shows St. Matthew Island. This is a large-area, small-scale chart utterly inappropriate for coastal nagivation. NOAA does not offer a high-detail navigation chart for St. Matthew Island similar to Chart No. 16380, which depicts St. Paul and St. George Islands in detail. This underscores the need for a pilot with local knowledge at St. Matthew Island.

Also part of Exhibit B is the weather chart published in the Coast Pilot at page T-9 for St. Paul Island. One of the key facts is at the bottom of the chart: the mean number of days with fog annually is 190. In other words, fog is a factor for navigation more than half the year. This chart also provides an idea of the way in which the wind comes from every direction.

For the Board's review, AMP is also providing weather information from the National Weather Service, which maintains a primary weather station on St. Paul Island. Attached as Exhibits C and D are reports from St. Paul and, for comparison, Cold Bay. These reports include historic weather data going back many years.

The Cold Bay reports are provided to demonstrate that the weather in St. Paul is, in some important ways, worse that the weather in Cold Bay, a long-time compulsory pilotage area. Examination of the Weather Service data indicates that St. Paul has almost three times as many days during which fog reduces visibility to one-quarter mile or less (57.5 days for St. Paul versus 21.7 days for Cold Bay) and that St. Paul has more severe winds (mean speed of 17.7 mph for St. Paul versus 16.9 mph for Cold Bay). This information, coupled with the fact that vessel congestion is now

higher in the Pribilofs area than in Cold Bay, strongly supports AMP's contention that compulsory pilotage is needed in the Pribilofs.

The Weather Service included these comments in its report about St. Paul Island (Exhibit C-7):

> Frequent windy periods are characteristic of the island area throughout the year. Frequent storms occure from October to April, and these often are accompanied by gale-force winds to produce general blizzard conditions. Under the influence of prolonged north and northeasterly winds between January and April, the ice pack occasionally moves south to surround the island.

As the Coast Pilot notes, the winds in the Pribilofs shift constantly and often in a surprisingly short time. This has a direct bearing on the Board's decision. Because of these weather patterns, vessels are constantly on the move trying to find a lee in which to find protected waters in which to work. Typically, as explained below, such a movement occurs in the middle of offloading cargo and therefore involves both a freighter and a floating processor. This combination of severe conditions, multiple vessels, and frequent vessel movements is a key factor for the Board to consider. In winter, ice is generally an additional factor; the expertise of a pilot is particularly valuable in ice conditions.

Another key factor is that the water around the islands is shallow to the full extent of the three-mile territorial sea and beyond. For the Board's convenience, AMP is providing the following attachments:

Exhibits E and F	Excerpts of NOAA Chart 16380 for St. Paul and St. George
Exhibits G, H, and I	Excerpts of NOAA bathymetric charts for St. Paul, St. George, and St. Matthew

(The original of each of these charts has been sent to Pilot Coordinator Capt. Carl Luck for the use of the Board at the April meeting. Photocopies of the relevant portions are attached to each copy of this memorandum for the convenience of the Board members.)

The shallowness of the water is important here for two reasons. First, it is well-known that seas become more severe, more confused, and more "lumpy" in shallow water. Sea conditions throughout the Bering Sea are notoriously severe, in large part because the water is so shallow. This has a direct bearing on the safety of vessel operations and on the risks to human life, property, and the marine environment.

The second relevant consequence of the shallow water surrounding these islands is that vessels can anchor almost anywhere within the three-mile territorial sea. As AMP documents below, vessels are already anchoring and operating just outside the current compulsory pilotage boundary to avoid the expense of engaging a pilot. The charts attached as Exhibits E-I will help the Board to understand why it is essential for the Board to create a compulsory pilotage zone to the full extent of its three-mile territorial jurisdiction.

As a practical matter, floating processors can anchor and operate safely in the Pribilofs in 20 to 25 fathoms of water. While these vessels prefer to operate in shallower water to improve their anchoring, it appears certain that they will move to deeper water if that will enable them to avoid pilot fees.

For this discussion, AMP asks the Board to assume that vessels can and will anchor in up to 20 fathoms of water. That is 180 feet, or approximately 54 meters. AMP asks the Board to examine Exhibits E and F (NOAA Navigation Chart No. 16380), which measure depth in fathoms and feet, and Exhibits G, H, and I (NOAA bathymetric charts), which measure depth in meters.

All these charts show the three-mile territorial sea. AMP asks the Board to compare the three-mile line to the 20-fathom curve on Exhibits E and F, and to the 50-meter curve on Exhibits G, H, and I. These charts show that most of the water inside the three-mile line surrounding all three islands is shallow enough for vessels to anchor and operate. The major consideration for vessels operating within the three-mile line is not whether the water is shallow enough to anchor, but whether they can get in the lee of an island to avoid the wind.

B. Increase in vessel activity in the Pribilofs Area.

Until recently, these remote islands got relatively little vessel traffic. However, a major crab and pollock fishery has developed in the region. In the past few years, the anchorages in

the Pribilofs and St. Matthew have achieved priority importance in the fishing industry. By operating there, floating fish processors enable fishermen to avoid the delay and expense involved in running to and from Dutch Harbor. The emergence of significant vessel congestion in the Pribilofs coincided with the emergence of the large opilio crab fishery.

Peak activity times for the fishing industry are from January through May for the opilio crab fishery and July through September for the "B" season of the pollock quota. Often, there is a summer blue crab fishery near St. Matthew Island. All of these fisheries typically involve floating processing vessels up to 400 feet in length (plus the OCEAN PRIDE, a 700-foot former APL container ship converted to process surimi), a fleet of approximately 100 fishing boats, and a stream of foreign (and domestic) freighters averaging between 230 and 420 feet in length. At any given time during the season, the waters around St. Paul Island, for instance, might have up to 11 floating processors. During a typical 24-hour day, there could be up to 20 fishing boats and 6-8 freighters working simultaneously in the area.

In this connection, the Board is urged to review the attached typescript of the personal notes of Capt. David Sanders (Exhibit A), who kept a log of vessel activity at St. Paul early this year; the statement of Capt. Will Anderson (Exhibit J), who is a former master of factory trawlers and processors in the Pribilofs); and the summary of the harbormaster of St. Paul (Exhibit K), which identifies the floating processors working in the area during the periods January-June 1991 and January-March 1992. Capt. Anderson's statement is particularly valuable, inasmuch as it provides the perspective of processor master with experience in the Pribilofs.

When a floating processor arrives in the Pribilofs area, its goal is to operate 24 hours per day with as few shutdowns as possible. This requires fishing vessels to come alongside the processor to unload their catch, and freighters to come alongside to receive the processed product. With its limited hold space, a typical floating processor working at full capacity must offload cargo every two to three days. Obviously, these activities demand a high degree of skill in ship-handling and the ability to communicate clearly and quickly about vessel maneuvers. The foreign freighters operate under these demanding circumstances with masters of varying degrees of skill, both in ship-handling and in speaking English.

In this context, it is important to note that pilots are not under any economic pressure to keep a processor operating non-stop to the fullest possible extent. Pilots are more likely to make decisions about when, where, and how to move a vessel on the basis of safety considerations than economic considerations. A ship master under pressure from his owners to keep operating is better insulated from such pressure if a compulsory pilot makes decisions about vessel movements (see comments of Capt. Sanders, Exhibit A, for February 5, 1992, at 1020-1120 hours, relating to pressure on master of BANYO MARU not to use pilot; see also Statement of Capt. Anderson, Exhibit J).

Cargo operations (both offloading catch to the processor, and offloading product to the freighters) are frequently interrupted by weather, and freighters particularly may come alongside and depart two or three times before finishing the transfer of cargo. As weather and sea conditions change, and as the wind shifts, cargo operations tend to go on to the last possible minute, then the entire fleet moves "en masse" and simultaneously to a more protected spot near the island. Movements of this kind, to find more protected locations in the lee of the island, may happen more than once in a day. At these times, the vessels have to deal with conflicting schedules, deteriorating weather and sea conditions, small weather windows, parting mooring lines, dragging anchors, and language and communications barriers. Accidents are common.

In addition to the high degree of difficulty in bringing vessels alongside and departing under such conditions, many offshore hazards to navigation exist. Navigation in the waters adjacent to the islands and in and out of congested anchorages in high winds and seas, in low visibility conditions, create extreme hazards.

The wreck of the first ALL ALASKAN is on the north shore of St. Paul Island. This 4,000 gross ton floating processor (approximately 350 feet) went aground on March 20, 1987; it was blown ashore after dragging its anchor and being unable to recover in the high winds. The wreck of the 8100 gross ton Greek-flagged MYLOS REEFER is on the beach at St. Matthew Island, having gone aground in November 1989. In January 1989, the YARDARM KNOT grounded on a charted reef near St. Paul in bad weather, while trying to shift from one side of the island to another, and was damaged badly enough that it had to be towed to Dutch Harbor for temporary repairs to enable the vessel to get to Seattle for permanent repairs. The shores of these islands are littered with the hulks of smaller fishing vessels.

Not routinely reported, but well-known to all mariners who operate in this area, is the frequency of relatively minor collisions and near-catastrophes that result from the congestion coupled with severe weather and sea conditions. Vessel casualties and near-casualties have been and continue to be frequent occurrences in the area.

One of many reported casualties was in April 1990, when the freighter HAKKO BOOMERANG collided with the processor YARDARM KNOT while trying to come alongside the YARDARM KNOT. Weather was clear and visibility was good, but the winds were blowing 20-25 knots, according casualty report filed with the Coast Guard. The HAKKO BOOMERANG did not have a pilot on board at the time.

As this memorandum is being prepared, AMP has learned of a collision that occurred on March 29 or 30, 1992, between the Japanese freighter ORION and the processor YARDARM KNOT at St. George Island. AMP understands this incident is still being investigated. AMP urges the Board to obtain all the relevant information about this incident and include it in its deliberations of this issue.

AMP believes there can be no question about whether the level of vessel activity, coupled with the severity of weather and sea conditions, justifies imposition of a compulsory pilotage zone in the Pribilofs and around St. Matthew Island.

C. The marine environment is particularly rich and sensitive in the area, and must be protected.

All of the vessels operating in the Pribilofs and St. Matthew Island regions carry fuel and other potential contaminants. A typical floating processor may carry up to hundreds of thousands of gallons of diesel or bunker fuel when it arrives at the beginning of the season. Processors typically carry fuel not only for their own operations, but to serve as a floating fuel dump for the fishing boats delivering catch to it. A typical freighter may carry up to 100,000 to 200,000 gallons of fuel.

When considering whether pilotage ought to be compulsory in the area, the Board must recognize the rich diversity of marine life present and the possible consequences of a marine casualty. Deep-water, nutrient-laden currents that upwell onto the shallow continental shelf in the area teem with fish, squid, crustaceans, mollusks, and lesser organisms. The islands and surrounding waters

support immense colonies of nesting seabirds, huge rookeries of Northern fur seals (the largest in the world), Stellar sea lions, walrus, and gray and sperm whales.

The Pribilofs hold the largest seabird nesting colonies in Alaska and one of the largest single colonies in the Norther Hemisphere. The total nesting population in the islands is approximately 3.0 million, with 80 percent nesting on St. George. Even when not nesting, many species spend a good part of the year in the waters near the islands. An oil spill would cause major problems for these populations.

Well over half of the world's one million or so Northern fur seals return each year to the rookeries in the Pribilofs. The greatest concentrations on St. Paul are Zapadni-Tolstoi in English Bay, Reef Point and Village Cove, Lukanin-Kitovi in Lukanin Bay, and Northeast Point. These are also the most favored anchorages for the floating processors and the most heavily traveled by moving vessels. On St. George, the primary rookeries on the north side of the island are located near St. George Village and on the west side in Zapadni Bay; these are also areas that see the most vessel traffic. (See Exhibit L, excerpts from NOAA study of sensitivity of coastal environments and wildlife to spilled oil in the Pribilofs). Fur seals, like sea otters, rely on a dense coat of fur rather than blubber for insulation. Any amount of oil from a spill or beach residue destroys the integrity of this coat, resulting in loss of insulation and death from hypothermia.

Although the St. Matthew Island Group is surrounded by ice longer than the Pribilofs, it also supports vast colonies of nesting sea birds and some marine mammals. From an environemental point of view, St. Matthew is as important as the Pribilofs.

(The sources for this information include Island of the Seals, published by Alaska Geographic 1982, the NOAA sensitivity study attached as Exhibit L, and conversations with representatives of NMFS, including the field biologist directly responsible for the Pribilofs. The primary source documents are too voluminous to submit to the Board, but the Board is encouraged to consult these and other sources. Attached as Exhibits M and N are copies of two charts from Island of the Seals that indicate the location of Northern fur seal rookeries.)

Attached as Exhibit O is a letter to the Board dated March 27, 1992, from Steven T. Zimmerman, chief of the National Marine Fisheries Service protected resource management division. This letter reflects NMFS's support for any action, including compulsory

pilotage, that would reduce the possibility of vessel mishaps in the Pribilofs. Attached as Exhibit P is a letter to the Board dated April 1, 1992, from John Martin, refuge manager, Alaska Maritime National Wildlife Refuge, U.S. Department of the Interior, in the same vein, and highlighting the risk of an invasion of rats from a vessel that grounds in the area.

The most detailed and current assessment of dangers from oil pollution in the Pribilofs is contained in the final environmental impact statement (FEIS) prepared by the Minerals Management Service of the U.S. Department of the Interior for Lease Sale 89 in the St. George Basin. This proposed lease sale ultimately did not take place due to lack of interest from the oil industry, but the FEIS contains a wealth of environmental information too extensive to include in this memo.

However, it is important to note that the federal Fish and Wildlife Service and the Natural Resources Defense Council requested that there be a fifty-mile deferral of leasing around the Pribilofs. NMFS and the State of Alaska joined in expressing their concerns for the welfare of the Pribilofs, and supported the deferral. While the FEIS is too bulky to submit to the Board (though AMP will have it available at the April meeting), AMP does attach as Exhibit Q excerpts of the "Proposed Notice of Sale," which does reflect the sensitivity of the Pribilofs.

It is beyond dispute that the marine environment in this area is very rich and very sensitive. The severity of a marine disaster involving a spill of pollutants is obvious. The potential damage to both commercial and non-commercial marine populations cannot be overstated. Ironically, a significant oil spill in the region could deal a serious blow to the very industry that is now fighting against compulsory pilotage on economic grounds.

The vast seabird colonies and the populations of Northern fur seals and other marine mammals are commonly held public resources. No group, whether it be the residents of the islands or the processing industry, has the right to endanger this resource. All precautions must be taken to protect this marine environment for future generations, even if operating costs are slightly increased. Comments such as "It's their island, their seals, their oil spill" (made at the Board's January meeting by member Bill Lorch) are entirely inappropriate in AMP's opinion. This Board has an affirmative duty to consider environmental concerns in deciding whether to impose compulsory pilotage.

The importance of this criterion in the Board's deliberations on this issue is underscored by the fact that "protection of the marine environment" is a <u>new</u> criterion added by the legislature in the wake of the EXXON VALDEZ disaster in Prince William Sound. AMP urges the Board to give this element of the statute particular attention.

D. The Board must extend compulsory pilotage to the full extent of the three-mile territorial sea.

At its January 1992 meeting, the Board declined to take action to declare compulsory pilotage waters in the area beyond what is already required by the "default" provisions of 12 AAC 56.090. This provision provides that, if compulsory pilotage waters are not otherwise defined, then compulsory pilotage waters

> are those waters inshore of a line drawn approximately parallel with the general trend of the shore through the outermost aid to navigation, or if no aid to navigation exists, then a line drawn from headland to headland across the mouth of the entrance.

After a long discussion of "headlands" and "juridical bays," the Board determined that, under Section .090 of the regulation, compulsory pilotage waters currently exist only shoreward of a line between Reef Point and Zapodni Point on the south side of St. Paul Island.

The "default" provisions of Section .090 were adequate to meet the state's needs for compulsory pilotage waters at the time it was adopted. Historically, vessels congregated in "bays, sounds, rivers, or other estuaries" because they had to call at land-based ports for cargo operations, provisioning, repairs, and so forth. Historically, land-based ports were located only adjacent to protected waters.

Technology has overtaken Section .090. Its default provisions did not anticipate fleets of floating processors, with their attendant fishing boats and tramp freighters, that can now operate in the unprotected waters offshore of Alaska's islands and mainland. Floating processors and their fishing boats and freighters don't need "bays, sounds, rivers or other estuaries." All they need is shelter from winds and seas, and the lee of an island is usually sufficient for that purpose.

In short, Section .090 is not adequate to cope with the problems created by a fleet of floating processors operating in waters adjacent to an island. This Board cannot solve those problems simply by drawing a line from headland to headland. It must instead create a compulsory pilotage zone around the island in order to meet its statutory obligations.

As mentioned above, the shallowness of the waters surrounding these islands creates a problem for the Board in defining where to draw the line for a compulsory pilotage zone. The waters are shallow enough that the vessels can anchor and operate anywhere within the territorial sea around all three islands.

At the January 1992 meeting, an industry witness testified that if the Board draws a line for compulsory pilotage, the processors will simply move outside the line to avoid paying for pilots. That, in fact, is exactly what has happened since the January meeting. See the typescript of the notes of Capt. David Sanders, attached as Exhibit A. Time and again, Capt. Sanders makes note of floating processors moving to locations just outside the pilotage line to avoid pilotage fees.

The line between Reef Point and Zapodni Point includes Village Cove and English Bay. These anchorages have traditionally been most favored because of the lee they provide and their close proximity to harbor and transportation facilities at St. Paul. Since the January meeting, this area has become essentially "off limits" for vessels wishing to avoid pilotage costs. Processors now work either just across the line, in non-pilotage waters, or in Lukanin Bay and the large bights on the northeast and north sides of the island. (See notes of Capt. Sanders, attached as Exhibit A.)

The resulting shipping pattern serves neither the best interests of the State of Alaska nor those of industry. The processors are anchored farther offshore in waters much less favorable to working conditions and the transport of personnel. In an effort to save piloting costs, vessels now operate in areas that are less safe than anchorages within pilotage waters, creating unnecessarily increased risks for vessels and workers.

Under these circumstances, industry will continue to move its operations outside any compulsory pilotage line drawn by the Board, so long as it is perceived as practicable and economically advantageous to do so. It may be that the majority of vessel operations now occur within a mile from the islands, but if the

Board draws the compulsory pilotage line at one mile, it seems inevitable that the fleet will simply move outside the one-mile line. The same appears sure to occur regardless of where the Board draws the line. The shallowness of the water surrounding the islands permits them to do so (see Exhibits E-I and discussion in Section I-A above).

For that reason, AMP urges the Board to establish compulsory pilotage zones to the full extent of the three-mile territorial sea surrounding the islands of St. Paul, St. George, and St. Matthew. This would establish a clear-cut delineation of the compulsory pilotage zones around these islands, inasmuch as the three-mile territorial sea is clearly marked on all navigation charts of the region. To the full extent of the Board's authority, it would preclude vessels from avoiding pilotage by moving outside a line closer to the islands. It would also ensure that the Board has done all it legally can do to protect shipping, life, property, and the marine environment in the area.

AMP points out that the current pilot station is now <u>four</u> miles from St. Paul Island. 12 AAC 56.120(30). With this in mind, imposing a three-mile pilotage zone appears to be consistent with the prior decisions of this Board.

E. Comparison of the Pribilofs and St. Matthew to other ports and areas in the Western Region.

The justification for compulsory pilotage in the Pribilofs becomes readily apparent when one compares the level of vessel activity in the Pribilofs and St. Matthew Island with that in areas of the Western Region where pilotage is <u>already</u> required.

This is the salient fact: During the height of the opilio crab and pollock fisheries, the level of vessel congestion is exceeded only by Dutch Harbor (and sometimes Akutan) in the entire Western Region. The severity of weather and sea conditions in the Pribilofs is second to none in the entire Western Region, which includes the notoriously hostile Aleutian Island chain.

AMP has submitted with this memorandum information reflecting the vessel congestion in the Pribilofs. See Exhibit A (Notes of Capt. Sanders), Exhibit K (Summary of St. Paul harbormaster), and Exhibit J (statement of Capt. Anderson). These exhibits speak for themselves. If compulsory pilotage is justified in areas such as

Chignik, Sand Point, King Cove, Lost Harbor, and Atka, all of which have significantly less vessel traffic and significantly less hostile conditions, then compulsory pilotage is more than justified in the Pribilofs.

III. RECOMMENDATION

A. Amend 12 AAC 56.100

AMP urges the Board to adopt an amendment to 12 AAC 56.100, adding the following subsection:

> (15) all waters within three nautical miles of St. Paul Island, St. George Island, and St. Matthew Island in the Bering Sea.

AMP believes that the Board has sufficient information to form a rational basis for this amendment. If the Board believes it needs additional information prior to adopting this amendment, then AMP recommends that the Board assign the marine pilot coordinator to visit the area, observe the situation, and report back to the Board. This will provide the Board with information from a disinterested party.

Respectfully submitted this first day of April, 1992.

ALASKA MARINE PILOTS

By Capt. Tom Dundas, President
Capt. Will Anderson

pribmemo.amp

TABLE OF EXHIBITS

TYPESCRIPT FROM DAILY NOTES OF CAPT. DAVID SANDERS

At St. Paul January 15 to February 5, 1992

1-15 Pilot Capt. David Sanders (AA-149) arrives on station in St. Paul. Three Japanese freighters in area: ETSUYOH MARU, REEFER SACHI, SHIN MEI MARU. Also three floating processors: YARDARM KNOT, ALL ALASKAN, ALASKAN I). Pilot boat arrives on station.

1-16 1530 - REEFER SACHI shifts to alongside floating processor YARDARM KNOT in Lukanin Bay. No pilot.

1-18 BANYO MARU arrives St. Paul. ETSUYOH MARU departs.

1-19 Approx. 1300 - REEFER SACHI departs from alongside YARD ARM KNOT. YARDARM KNOT shifts from Lukanin Bay to anchor in Village Cove inside compulsory pilotage waters. REEFER SACHI goes back alongside, then departs. No pilot.

1500 - SHIN MEI MARU switches with REEFER SACHI to alongside YARDARM KNOT in compulsory pilotage waters. No pilot. (I believe SHIN MEI damaged YARD ARM KNOT during this landing.)

1-20 In morning hours BANYO MARU (which switched out with the ETSUYOH MARU 1-18) goes alongside ALL ALASKAN inside compulsory pilotage waters. No pilot.

1-21 In early hours BANYO MARU away from ALL ALASKAN and alongside ALASKAN I. No pilot.

1-23 Informed by Capt. Tom Dundas of State's definition of compulsory pilotage line between Reef Point and Zapadni Point. I then advised all three floating processors of the change (ALL ALASKAN, YARDARM KNOT, ALASKAN I).

AMP Ex. A

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1-24 Pilot began working compulsory pilotage waters of St. Paul Island.

0545 - Shift BANYO MARU to outside pilotage boundary line. Pilot on board.

1620 - Shift SHIN MEI MARU from alongside YARDARM KNOT to pilot station. Then bring freighter HAKKO BOOMERANG from anchor to alongside YARDARM KNOT. All three floating processors anchored inside compulsory pilotage boundary.

1-26 1100 - Shift HAKKO BOOMERANG from alongside YARDARM KNOT to anchor inside compulsory line. Pilot on board.

1500 - ALL ALASKAN shifts outside sompulsory pilotage line approx. 0.2 miles ouside boundary line.

1-27 0955 - Shift HAKKO BOOMERANG from anchor inside compulsory line to alongside YARDARM KNOT. Pilot on board.

1030 - Observed ALASKAN I shifting from anchor inside compulsory line to alongside BANYO MARU outside compulsory line. No pilot.

1-28 Japanese freighter TAISETSU arrives St. Paul and anchors outside compulsory boundary line. BANYO MARU goes alongside and departs ALL ALASKAN. No pilot either move. Located 0.2 miles outside compulsory line.

1-29 TEISETSU shifts alongside ALL ALASKAN anchored 0.2 miles outside compulsory line. No pilot.

1940 - While alongside ALASKAN I, BANYO MARU heaves anchor while ALASKAN I drops anchor. After both vessels riding on ALASKAN I anchor, BANYO MARU shifts to anchor outside compulsory line. No pilot.

1-30 TEISETSU shifts alongside ALL ALASKAN outside line. No pilot.

1-31 0400 - Freighter ORION arrives St. Paul and anchors outside compulsory line.

1015 - TEISETSU departs ALL ALASKAN and anchors outside compulsory line. No pilot.

AMP Ex. A

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2-1 1500 - Shift HAKKO BOOMERANG from alongside YARDARM KNOT then shift ORION from anchor to alongside YARDARM KNOT. Pilot on board. While on board ORION observed that only chart available was small-scale chart. Vessel working area without appropriate detail of area.

1620 - TEISETSU shifts to alongside ALL ALASKAN outside compulsory line. No pilot.

1735 - Freighter ZUIFU arrives. Anchors outside compulsory boundary.

2-2 1145 - ALASKAN I shifts to north side of St. Paul.

1400 - BANYO MARU moves to north side of St. Paul. No pilot.

1640 - TEISETSU shifts away from ALL ALASKAN and anchors outside line. No pilot.

1720 - Shift ORION from alongside YARDARM KNOT to anchor outside bondary line. Pilot on board.

1800 - ALL ALASKAN shifts inside boundary line.

Weather today SE 25-30 knots with low westerly rollers, tricky in Village Cove.

2-3 ALL ALASKAN, YARDARM KNOT anchored inside boundary line until approx. 0900 then shift to north side of St. Paul Island. Approx. 1800 YARDARM KNOT, ALL ALASKAN, and ALASKAN I come back to Village Cove. YARDARM KNOT and ALASKAN I anchored inside line, not sure about ALL ALASKAN. Freighters ORION, ZUIFU, TEISETSU all anchored outside line and anchors holding fine.

2-4 1555 to 1730 - Shift ZUIFU to alongside YARDARM KNOT inside boundary line and pilot on board. ALL ALASKAN anchored outside line (just barely); YARDARM KNOT, ALASKAN I anchored inside.

2-5 0155 to 0220 - Shift ZUIFU from alongside YARDARM KNOT to anchor inside boundary line. Pilot on board.

0220 to 0330 - Shift ORION to alongside YARDARM KNOT inside boundary line. Pilot on board.

United States Coast Pilot 9

Pacific and Arctic Coasts Alaska: Cape Spencer to Beaufort Sea

Fifteenth Edition

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

1020 to 1120 - Shifting BANYO MARU from anchor outside boundary line to alongside ALASKAN I inside the line; pilot on board. Captain of BANYO MARU told me that he was questioned by Taiyo (his company) as to why he used a pilot on 1/24/92. Also when the ALASKAN I requested this shift, the captain of the BANYO MARU had to get permission from Taiyo office and ship's local agent (North Star) before he would come inside the line to take cargo from the ALASKAN I. He had received explicit instructions against doing that from both his company and ship's agent.

2340 to 2400 - Shifting BANYO MARU from alongside ALASKAN I to pilot station. Pilot on board.

Pilot is relieved and departs St. Paul.

leading marks, and at some of the crossings it is necessary to wait for high water. A pilot is necessary.

(338) Vessels coming down river stand out to sea from a point east of Carter Spit. In entering, this track is not used because of the possibility of running up a blind channel.

(339) Tides.–The diurnal range of tide is 12.2 feet at Kuskokwak Creek entrance and 4.0 feet at Bethel.

(340) Currents.–The currents of Kuskokwim Bay and River are strong, attaining velocities of 5 knots at times. A strong tidal current sweeps past Cape Newenham, setting approximately N and S. Along the N side of the cape, tidal currents of about 1 knot have been observed setting NE and SW. In general, the currents set in directions parallel to the axes of the channels between the shoals. In the channel leading to Goodnews Bay, about 1 mile from the N end of South Spit, flood and ebb each has a velocity of about 2.5 knots, setting NE and SW, respectively. In the deep channels off Jacksmith Bay the flood current has a velocity usually of about 2 to 2.5 knots at strength, and the ebb from 2.5 to 3 knots. In the vicinity of Apokak Creek, the strongest current observed was 3.5 knots. The flood current is felt only about as far as Bethel.

(341) By arriving at the entrance to Eek Channel on the last of the ebb, a favorable current can be carried nearly to Bethel, providing there are no delays.

(342) (See Tidal Current Tables for predictions in Kuskokwim Bay and River.) Variations from the predicted times and velocities, because of freshets and winds, may be expected.

(343) Weather.–The best weather usually occurs in March and April. During the summer, SE to SW gales are frequent and last from 2 to 5 days. These storms gradually blow themselves out and are generally followed by a few days of good weather. In the early fall, N winds are frequent and are usually accompanied by clear skies. After mid-September strong gales become frequent and prolonged.

(344) (See page 1-21 for dates of ice breakup and freezeup.)

(345) Water can be obtained from small streams in Security Cove, Goodnews Bay, and Carter Bay. In the vicinity of Eek Island, the river water is fresh at all stages of the tide; it is very muddy, but the silt settles readily.

(346) Chart 16380.–The Pribilof Islands, in the Bering Sea about 200 miles NW of Unimak Pass, consist of St. Paul, St. George, Otter, and Walrus Islands; the latter two are small and uninhabited. St. Paul and St. George have the largest and most numerous fur seal rookeries in the world. The group is under the jurisdiction of the National Marine Fisheries Service and is patrolled during the sealing season by vessels of the U.S. Coast Guard, under provisions of the international treaty governing sealing. From June 1 to October 15, the fur seal breeding and birthing season, landing is forbidden at the rookeries in the vicinity of English Bay, Reef Point, Lukanin Point, Polovina Point, and Northeast Point on St. Paul Island. Walrus and Otter Islands are bird reservations, landing is prohibited at all times, unless a permit is obtained from the National Marine Fisheries Service.

(347) Radiotelephone and radiotelegraph services are maintained on St. Paul Island and St. George Island. In addition, interisland radio and satellite communications are maintained.

(348) A supply vessel makes several trips a year between Seattle and the Pribilof Islands (St. George and St. Paul).

(349) There are no landlocked harbors about the islands, but safe anchorage is always available on the lee sides. Residents of St. Paul Island say that the prevailing wind during the summer is from the NE, which makes Village Cove on St. Paul Island a good anchorage in all but severe SW winds. The bottom in Village Cove is black sand, and the holding ground is good. During SW winds good anchorage is available in Lukanin Bay on the SE side of St. Paul Island.

(350) The following regulations are from 50 CFR, Wildlife and Fisheries:

(351) Part 215–Pribilof Islands

(352) Subpart C–Administration

(353) §215.21 Visits to fur seal rookeries.

(354) From June 1 to October 15 of each year, no person, except those authorized by a representative of the National Marine Fisheries Service, or accompanied by an authorized employee of the National Marine Fisheries Service, shall approach any fur seal rookery or hauling grounds nor pass beyond any posted sign forbidding passage.

(355) §215.22 Dogs prohibited.

(356) In order to prevent molestation of fur seal herds, the landing of any dogs at Pribilof Islands is prohibited.

(357) §215.23 Importation of birds or mammals.

(358) No mammals or birds, except household cats, canaries, and parakeets, shall be imported to the Pribilof Islands without the permission of an authorized representative of the National Marine Fisheries Service.

(359) §215.24 (Reserved)

(360) §215.25 Walrus and Otter Islands.

(361) By Executive Order 1044, dated February 27, 1909, Walrus and Otter Islands were set aside as birdreservations. All persons are prohibited to land on these islands except those authorized by the appropriate representative of the National Marine Fisheries Service.

(362) §215.26 Local regulations.

(363) Local regulations will be published from time to time and will be brought to the attention of local residents and persons assigned to duty on the Islands by posting in public places and brought to the attention of tourists by personal notice.

(364) §215.27 Wildlife research.

(365) (a) Wildlife research, other than research on North Pacific fur seals, including specimen collection, may be permitted on the Pribilof Islands subject to the following conditions: (1) Any person or agency, seeking to conduct such research shall first obtain any Federal or State of Alaska permit required for the type of research involved.

(366) (2) Any person seeking to conduct such research shall obtain prior approval of the Director, Pribilof Islands Program, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, 1700 Westlake Avenue North, Seattle, Wash. 98109, by filing with the Director an application which shall include:

(367) (i) Copies of the required Federal and State of Alaska permits; and

(368) (ii) A resume of the intended research program.

(369) (3) All approved research shall be subject to all regulations and administrative procedures in effect on the Pribilof Islands, and such research shall not commence until approval from the Director is received.

(370) (4) Any approved research program shall be subject to such terms and conditions as the Director, Pribilof Islands Program deems appropriate.

(371) (5) Permission to utilize the Pribilof Islands to conduct an approved research program may be revoked by the Director, Pribilof Islands Program at any time for noncompliance with any terms and conditions, or for violations of any regulation or administrative procedure in effect on the Pribilof Islands.

(372) Weather.–Fogs are especially thick and prevalent in this vicinity in the summer, and navigation is attended with difficulty and danger. A navigator should plan to make landfalls in the Pribilof Islands during the summer based on

no land being visible. One annoying characteristic of the area is very thick fog accompanying strong winds. Logs from survey vessels indicate that a typical summer day in the Pribilof Islands is as follows: Dense fog at daylight, vessels anchored 200 yards distant not visible, calm sea, light airs; by noon intermittent sun, a wet drifting fog, gentle breeze; by evening a dense fog, winds increased to force 6. Dense fog with visibility less than 0.5 mile is more common around St. Paul Island than around St. George Island. An unusual characteristic off North Anchorage, St. George Island, was clear visibility along the shore accompanied by dense curtainlike fog to seaward.

(373) Winds do not continue to blow from the same quarter for any length of time. From December through April winds blow from the NE more than from the other directions. After September 1, gales are frequent and violent, and blow from all directions.

(374) Ice.–The Pribilofs are near the S limit of the ice in Bering Sea. On rare occasions the icefields extend as far as 35 miles S of St. George Island. In 7 years of National Weather Service ice records at St. Paul Island, no sea ice at all was reported in 3 years. In the other 4 years, navigation remained easy throughout 1 year and became restricted to full-powered vessels for short periods in March and April of 3 years; at no time did navigation become suspended or require the use of an icebreaker.

(375) In 1974, a pinnacle was reported 68 miles WNW of St. Paul Island in 57°39.2'N., 173°24.0'W. (see chart 16006). Depth of water over the pinnacle is not known.

(376) Chart 16381.–St. George Island, the southernmost of the Pribilof Islands, consists mainly of high volcanic hills and ridges, and its entire coast is a precipitous cliff except for a few miles on the N side and short intervals at Garden Cove and Zapadni Bay. The E and W extremities of the island, Tolstoi Point and Dalnoi Point, are bold promontories. High Bluffs, on the N side of the island, 1,012 feet high, is a prominent landmark and is visible from St. Paul Island, a distance of nearly 40 miles, on a clear day.

(377) There are no harbors, but vessels anchor at North Anchorage, Garden Cove, and Zapadni Bay, according to the direction of the wind; the anchorages are poor except with the wind directly off the land. At a distance generally not greater than 2 miles from the island the depth of the water is but little less than the surrounding sea, and in thick weather it is not safe to depend upon soundings for picking up the land unless sure of the position. Vessels should not approach the island in less than 12 fathoms of water. There are no outlying dangers except the rock awash 0.6 mile NE of East Landing, and the small reefs at Zapadni Bay and North Anchorage. A rocky shoal, covered 1¼ fathoms, is 9.3 miles 078° from Tolstoi Point.

(378) The anchorage in Zapadni Bay, on the SW side of the island, in 10 fathoms, affords shelter with winds from ENE to NNW. The landing is protected by a breakwater at the E end of the bay. A reef extends about 0.2 mile offshore S of the anchorage.

(379) With N winds, a landing may sometimes be made at Garden Cove S of Tolstoi Point, on the sand beach. The anchorage affords shelter from NW winds, but with the exception of a small area the bottom is rocky.

(380) Currents.–In the open water the tidal current is rotary, turning clockwise. Along the N and S shores of the island the current in general sets E on the flood and W on the ebb. The largest velocity observed over a period of about 6 days in July and August was about 1.5 knots. With opposing wind and current, tide rips occur off Tolstoi and Dalnoi Points. These rips are not heavy enough to be of any consequence, except that to strangers they appear to be breakers. The water is deep off both points, which can be passed close-to with safety.

(381) The approach to North Anchorage is marked by a private marker about 0.5 mile N of St. George. The most prominent landmarks in the village of St. George are the white roofs of the quadrangle of sheds, low down at the water's edge. The roofs loom up first through the fog. Also conspicuous is a tight group of buildings on the slope and ridge back from the beach. Most easily identified is the Russian Orthodox church whose bell tower has a green onion-shaped roof topped by a white St. Andrew's cross.

(382) Vessels should keep the street which extends through the village bearing 164°. Good anchorage will be found about 700 yards from the landing. There is swinging room for a 400-foot vessel riding to 45 fathoms of chain.

(383) The landing is a square block of reinforced concrete next to a cutting in the rocks. The area around the landing, and for about 75 feet to seaward, practically bares at extreme low water. The landing can be used by small shallow-draft boats 3 hours on either side of high water. A launching ramp is at North Anchorage.

(384) East Landing, just NE of the village, is better protected from a W swell. A ledge awash is a short distance off the landing. If desired, a boat will come out to anchored vessels when landing is practicable.

(385) Local magnetic disturbance.–Differences of as much as 11° from the normal variation have been observed on St. George Island.

(386) The U.S. Public Health Service maintains a Native Health Services clinic in the village of St. George.

(387) Communications.–St. George Airport provides air services four times a week. Peninsula Airways Aircraft Charter will provide air transportation in an emergency.

(388) Chart 16382.–Otter Island, off the S side of St. Paul Island, has an abrupt bluff 288 feet high at its SW end, slopes gradually to the N, and rises again in a crater, about 141 feet high, at its extreme E end. Foul ground, marked by kelp, extends about 0.8 mile from the island on its S, SW, and N sides. The N side, from Crater Point to Northwest Reef, is clear of dangers. Probably the best anchorage near the island is in 9½ fathoms, black sand and broken shells, with the NE extremity of Crater Point bearing 185°, distant 0.5 mile. This island must be approached with great caution in thick weather, and at all times a vessel should keep out of kelp. A 38-foot shoal is 2.1 miles ENE of Otter Island.

(389) Between Otter Island and Reef Point, St. Paul Island, the tidal currents are strong, and with heavy winds the tide rips are dangerous especially on the ebb current. In 1976, the NOAA Ship SURVEYOR observed currents setting NW at about 2.5 knots about 2.1 miles SW of the SW end of Otter Island.

(390) Walrus Island, off the E side of St. Paul Island, is low, about 39 feet high, level on top, and composed of irregular masses of volcanic rock. It is very hard to pick up in thick weather. It is about 0.4 mile long and 0.1 mile wide. Anchorage can be had on either side of it, 0.3 to 0.5 mile offshore, in 10 to 15 fathoms. Landing can be made with smooth water, the best place being in a small cove at the SW corner. The island is a bad place to make in a fog.

(391) Parts of Otter and Walrus Islands are covered with sea birds in the breeding season. Walrus Island is a major sea lion rookery. Landing on the islands is prohibited unless a permit is obtained from the National Marine Fisheries Service.

(392) Current observations made in July and August W of Walrus Island show that the current is rotary turning clockwise, with velocities exceeding 2 knots at times.

(393) St. Paul Island, the northernmost of the Pribilof Islands, is about 235 miles NW from Unimak Pass. The W and SW parts of St. Paul Island are high and mountainous, with precipitous cliffs at the coast. The rest of the island is a comparatively low, rolling plateau, with a number of extinct volcanic peaks scattered over its surface. Bogoslof Hill, 590 feet high, a conical crater near the center of the island, and Polovina Hill, double-peaked and 470 feet high, near the E end, are conspicuous and the best landmarks in clear weather when coming from S. From this latter hill the island stretches away, in a low, narrow neck to Hutchinson Hill, about 100 feet high, on Northeast Point. W of Lukanin Bay the coast of the S side of the island is rocky, with bluffs at the points. The shore of the rest of the island is generally a sand beach, with rocks in the vicinities of the seal rookeries. A radiobeacon is about 2.7 miles NE of the village of St. Paul, and a tall loran tower is about 0.8 mile SW of the beacon. An aerolight is about 0.5 mile ESE of the beacon.

(394) A rocky ledge covered less than 3 fathoms with no visible kelp is 5 miles NE of Northeast Point. Kelp-marked reefs extend about 0.4 mile SE from the two low points S of Northeast Point. A dangerous ledge with two rocks covered less than 2 fathoms is 1 mile N of Hutchinson Hill. With a moderate swell the sea breaks over these rocks.

(395) On the N side of St. Paul Island, depths of 5 fathoms or more are 1 mile offshore.

(396) A shoal covered 2 fathoms is 7.5 miles W of St. Paul Island.

(397) Breakers extend 0.3 mile of more off Southwest Point.

(398) A dangerous ledge, usually marked by breakers, extends 0.6 mile SW and S from Reef Point, the S point of the island.

(399) Sea Lion Rock, about 0.3 mile S of Reef Point, is prominent when approaching the point from an E or W direction.

(400) A reef extends about 0.3 mile off Stony Point, the NE point of Lukanin Bay.

(401) Pilotage, except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. (See Pilotage, chapter 3, for details.)

(402) The Bering Sea is served by the Alaska Marine Pilots and Southwest Alaska Pilots Association.

(403) Vessels using Southwest Alaska Pilots Association pilots and en route to St. Paul can meet the pilot boat about 4 miles W of Reef Point (57°06.5'N., 170°17.7'W.).

(404) The pilot boat can be contacted by calling "ST. PAUL PILOT BOAT" on VHF-FM channel 16 or on a prearranged frequency between pilot and agent/vessel.

(405) Anchorage.–The usual anchorage at St. Paul Island is W of Village Cove between Zapadni Point and Reef Point in the vicinity of the 10-fathom curve. The bottom, in general, is sandy, but rocky bottom will be found in the vicinity of Zapadni Point and Tolstoi Point. Anchorage can be found NE from Reef Point, off Black Bluffs and East Landing, and in Lukanin Bay.

(406) Lukanin Bay has a sandy bottom and is used when W swells make the Village Cove anchorage undesirable. From the Village Cove anchorage the village of St. Paul is obscured by a bluff although it is in full view from the Black Bluffs anchorage.

(407) In the spring (April-May) as the ice edge moves N, the winds can radically change its configuration. Vessels anchoring in Village Cove or other areas around the Pribilof Islands should maintain a careful ice watch so as not to become entrapped.

(408) Vessels should not attempt to ride out a gale at anchor near the islands, unless to leeward and well sheltered. The surf is apt to make quickly and is dangerous on the weather side of the island.

(409) Prominent in the approach to the anchorage off Village Cove are the three large steel tanks on a bluff just W of the village. Also on the bluff, just to the N, are eight smaller white tanks. Vessels should steer 082° for the center of the three large steel tanks and anchor in about 8 fathoms with Reef Point and the center of Sea Lion Rock in range.

(410) Zapadni Point, Tolstoi Point, and Reef Point, 2.5 miles WNW, 0.6 mile NW, and 1 mile SW of Village Cove, respectively, are the best radar targets in the area at a range of 5 to 7 miles.

(411) There is no protected harbor nor satisfactory landing facilities. Vessels are often delayed at St. Paul in landing cargo and personnel because of strong winds that build up heavy seas and make landing dangerous or impossible. In Village Cove, on the W side of Reef Point, the landing is at a reinforced concrete pier just N of the bluff point. The approach to this landing is shoal, and incoming swells frequently break across the entire entrance. Extreme caution should be used when any swell is running because the swells build up as they approach the shoal water, or round the bluff point, and break unexpectedly. The pier has a face of about 100 feet with depths alongside of 3 to 4 feet. Supplies are lightered ashore by power barge or bidarkas (native skin boats). A self-propelled crane is used on the pier to load and unload lighters.

(412) St. Paul, about midway along a peninsula extending from the S side of St. Paul Island, has small wooden dwellings painted white with dark-colored roofs, a church, hotel, a small hospital, several large buildings, and a machine shop with limited facilities. The hospital patients requiring surgery are transferred to Anchorage by jet medevac. A 10-ton marine skidway is available for emergency repairs.

(413) A commercial airline provides weekly mail and passenger service to and from Anchorage via Cold Bay or Dutch Harbor when weather permits. A weather station and a loran station are on St. Paul Island. The weather station monitors CB channel 9, and the loran station monitors VHF-FM channel 16 (156.80 MHz).

(414) Landing is forbidden at the fur seal rookeries on St. Paul Island during the breeding season, June 1 to October 15.

(415) Weather.–The climate is typically maritime, resulting in considerable cloudiness, heavy fog, high humidity, and rather well restricted daily temperature ranges. Humidities remain uniformly high from May to late September, and during the summer period there is almost continuous low cloudiness and occasional heavy fog. The differences between average maximum and minimum temperatures for the entire year are only slightly above 7° F, and the greatest monthly variation in March is slightly less than 12° F. Temperatures remain on the cool side even during the summer, and the highest temperature on record is 64° F in August of both 1936 and 1941. Extreme highs in summertime usually range around the middle fifties. Although record low readings fall well below the zero mark, such extremely cold days are rather rare. On the average only 5 days each winter season have temperatures falling below the zero mark.

(416) Despite an environment of high humidities, precipitation on St. Paul Island is surprisingly light. The annual average is slightly above 24 inches, which is slightly below the

average for Alaska as a whole. The greatest 24-hour precipitation on record fell slightly short of 2 inches. April is generally the driest month, with a gradual increase of precipitation until a mean monthly total of over 3 inches is reached during August, September, and October. This is followed by a gradual decrease during the succeeding months until the return of April. Thunderstorms are extremely rare on St. Paul Island. The only isolated occurrence ever reported was in June 1939.

(417) Frequent windy periods are characteristic of the island area throughout the year. Frequent storms occur from October to April, and these often are accompanied by gale force winds to produce general blizzard conditions. Under the influence of prolonged N and NE winds between January and April, the ice pack occasionally moves S to surround the island. During recent years, the S limit of this movement has been between St. Paul and St. George Islands, some 40 miles to the SE of St. Paul.

(418) (See page T-9 for St. Paul Island Climatological Table.)

(419) Tides and currents.–The diurnal range of the tide at Village Cove is 3.2 feet. Around the island the current sets NW on the flood and S on the ebb, following the trend of the shore. The greatest velocity occurs at Northeast Point and between Reef Point and Otter Island. Average velocity at strength of current is 1 to 2 knots, but with continued strong winds from one direction it may increase to 3 knots.

(420) There are heavy rips around Northeast and Southwest Points, also between Reef Point and Otter Island, where they are worse on the ebb. The tides and tidal currents are greatly influenced by the winds.

(421) Chart 16006.–Nunivak Island, in the Bering Sea near the Alaska mainland, is about 330 miles N of Unimak Pass. Dangerous shoals and uneven bottom have been reported and are shown on the chart; the island should be approached with extreme caution.

(422) From W, Nunivak Island shows gentle slopes terminating seaward in reddish cliffs 150 to 462 feet high. The highest point of the W part of the island rises to 866 feet 10 miles ESE from Cape Mohican. Near the center of the island is Roberts Mountain, 1,675 feet high, the highest of a group; this mountain is built up of a series of volcanic benches, the top being the steep side of a breached crater. The E end of the island is low, for the most part, except for some low hills and Twin Mountain, a breached crater 627 feet high.

(423) In clear weather the island generally can be made out for 30 miles from any direction. The island is inhabited by herds of reindeer.

(424) In 1899 the U.S.S. CORWIN cruised completely around Nunivak Island, following the shore and outlying islands at a distance of about 2 miles, and found general depths of 7 to 10 fathoms. The coast is generally abrupt and rocky, with numerous bights in which anchorage was found in 3½ to 7 fathoms.

(425) Cape Mohican, the W point of Nunivak Island, is a narrow promontory about 2 miles long. The point of the cape is a cliff 266 feet high from which the terrain descends E to 150 feet for 2 miles before ascending gradually to the higher ground inland.

(426) Cape Mohican Light (60°13.0'N., 167°27.0'W.), 285 feet above the water, is shown seasonally from a skeleton tower with a red and white diamond-shaped daymark on the end of the cape.

(427) A shoal about 1 mile wide extends 5 miles 059° from Cape Mohican and has depths of 2 to 4 fathoms over it. The shoal area should be avoided until it has been completely surveyed. The 10-fathom curve extends 7.5 miles 058° from the cape.

(428) In 1979, the U.S. Const Guard Cutter IRONWOOD reported possible shoreline charting inaccuracies on the NW side of Nunivak Island between Cape Mohican and Nash Harbor. Until surveys are made of this area, mariners are advised to use caution when using shoreline features for navigation.

(429) Nash Harbor, on the N coast of Nunivak Island 16 miles E of Cape Mohican, is a good anchorage except with winds from NW through N to NE. The coast to the W of the harbor is fairly high and is backed by cliffs, while to the NE it is low. The S side of the harbor has a sand-and-gravel beach at the foot of a 30-foot bluff. The bottom slopes gradually from 10 fathoms outside Nash Harbor to the beach at the head.

(430) The harbor is 1.5 miles wide and about 1 mile in depth. The bottom is sand except near the rocky parts of the shore, and there are no indications of dangers over a large 4- to 6-fathom area in midharbor. Boats usually land off the village of Nash Harbor, on the W side of a creek that empties into the SW part of the harbor; however, there are boulders close to shore at this landing as well as in the cove on the W shore. The creek drains a lake, but the water is brackish because the lake level is affected by the tides. The lake freezes every winter and makes an excellent landing place for airplanes fitted with skis; it is also large enough for seaplanes to use in summer.

(431) In 1951, the survey ship PATHFINDER made the approach to Nash Harbor (see chart 16006) on course 090° for 21 miles from a position 4.5 miles N of Cape Mohican until abeam of the harbor, then steered 180° for midharbor to anchorage in 6 fathoms.

(432) Cape Etolin, 40 miles ENE of Cape Mohican, is the northernmost point of Nunivak Island. The cape is a narrow strip of land with a ridge of low hills midway along its outer part; it appears as two or more islands from a distance W. A small island is about 2 miles off the end of the cape; between are ledges. A dangerous rocky area extends W from Cape Etolin for about 1.5 miles.

(433) Mekoryuk, about 2 miles W of the inner end of Cape Etolin, and Nash Harbor are the only villages on Nunivak Island that are inhabited the year round. A weather station is maintained at Mekoryuk, and the village has weekly mail service by air; radiotelegraph communication is maintained.

(434) Anchorage can be found NW of Mekoryuk in 25 to 32 feet of water.

(435) In 1951, the PATHFINDER anchored on the W side of Cape Etolin, 4.5 miles NW of Mekoryuk, in 5 fathoms, sand bottom, on bearings 080° to N tangent of Cape Etolin, 089°30' to highest knoll on Cape Etolin, 122° to center of schoolhouse, the largest building in Mekoryuk, and 246° to N tangent of point 5.5 miles to the SW. From this anchorage the N tangent of Cape Etolin was open 001°30' from the S tangent of Cape Vancouver. The anchorage was approached from W on a heading of 092° for the highest knoll on Cape Etolin. The approach should be made with caution as the area shoals rapidly and the reference points are apt to be obscured by fog except during N winds. From the anchorage, a launch ran on a general course of 120° toward Mekoryuk for 3 miles and obtained a minimum depth of 25 feet.

(436) Shoals covered 3 fathoms have been reported about 7.5 miles N and 15.5 miles NW from Cape Etolin, and a shoal covered 4½ fathoms has been reported 12.5 miles NNE from the cape; all with deep water surrounding them. Keeping Cape Vancouver bearing N of 086°, Cape Etolin can be rounded when coming from W in 10 fathoms. When

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Cape Vancouver bearing 080° or E of this bearing, considerable shoal water and irregular depths are found.

(437) Cape Etolin Anchorage, the bight on the E side of the cape, has fair holding ground in 2 to 5 fathoms, but is open to the NE. Near the S side, and about 0.3 mile from the head of the bight, is anchorage in 3 fathoms; the holding ground is gravel and only moderately good. Further out it is deeper but more exposed to the strong tidal currents and rips of Etolin Strait, the wide passage between Nunivak Island and the mainland.

(438) Several shoals have been reported in Etolin Strait. In 1968, the U.S. Coast Guard Cutter NORTHWIND in transiting the strait, reported that depths in some cases were found to be greater or lesser than now charted. Until surveys are made of this area, mariners are advised to use extreme caution.

(439) In 1971, the Coast Guard Cutter STORIS observed the following conditions on the E side of Etolin Strait. Depths of 2½ fathoms were found in 59°59.0'N., 164°56.0'W. Proceeding essentially W from that position depths increased to 5 fathoms, then quickly shoaled to 1½ fathoms in 60°01.0'N., 165°05.0'W. The bottom was sand and mud. The 3-fathom shoal centered in 59°49.0'N., 164°55.0'W. was found in charted position. The STORIS further reported that the depths were found to be generally as noted on chart 16006 in the area SE of the charted shoals and changes in depth were very gradual.

(440) In May 1977, the NOAA Ship MILLER FREEMAN reported shoaling to 4¼ fathoms centered in about 59°49.9'N., 165°33.0'W. Caution is advised in this area.

(441) Cape Manning is 15 miles SE of Cape Etolin. Triangle Island is 5 miles NW of Cape Manning and 2 miles from the nearest shore of the main island, with foul ground reported between.

(442) Cape Corwin, 20 miles E of Cape Manning, is the easternmost point of Nunivak Island. The cape is low and has a rocky shore on its N side. The two peaks of Twin Mountain are 7 miles NNW of the point of Cape Corwin and can be seen for 25 miles in clear weather.

(443) Cape Mendenhall, 18 miles WSW of Cape Corwin, is the southernmost point of Nunivak Island. The cape is 255 feet high and has a low rock bluff 10 to 20 feet high on its E side. A 2½-fathom shoal is 4 miles SW of Cape Mendenhall.

(114) During a N blow in August 1951, the survey ship EXPLORER found satisfactory anchorage in 8½ fathoms about 10 miles NW of Cape Mendenhall. The anchorage is about 1.5 miles off the beach of the second bight NW of the cape and is protected from NW through N to E. As the ship approached on a SE course, the water shoaled uniformly from 14 to 8½ fathoms. The fine gray sand bottom is good holding ground. Currents along the coast had velocities estimated to be as much as 1 knot.

(445) From Cape Mendenhall the coast extends NW for about 40 miles to what may be called the SW cape of Nunivak Island. The few soundings obtained show deep water fairly close to shore, and it is apparently safe to follow the shore at a distance of 2 miles. Depths of 4¾ to 6 fathoms have been found on an extensive shoal about 10 miles off this stretch of coast.

(446) The SW cape has cliffs 100 to 150 feet high; the summit is gently sloping tundra. In the small cove E of the cape, landings can be made on the sandy beach in front of the few barabaras of Tachikuga, an abandoned native village. Water can be obtained from the stream just E of the abandoned village; at low water the stream is fresh to its mouth. Temporary anchorage is possible in 7 to 9 fathoms about 0.8 mile E of the entrance to the cove.

(447) From the SW cape, the coast of Nunivak Island extends N for about 8 miles to Cape Mohican. Along this stretch are impassable cliffs 150 to 450 feet high, and there are no landing places. The 6-fathom curve is about 1.3 miles offshore.

(448) Tides.-The diurnal range of tide at Tachikuga, on the SW side of Nunivak Island, is 4.3 feet. At Nash Harbor, on the N side, the diurnal range is 5.3 feet, and the tide occurs about 1 hour later than at Tachikuga.

(449) Currents.-On the N and SW sides of Nunivak Island the current has a large diurnal inequality. NE of Cape Mohican a 4-hour series of current observations in July 1951 showed a NE current which at strength had a velocity of 1.5 knots. Observations made in June and August 1951 W of Cape Etolin showed tidal currents setting along the shore in both directions with velocities of about 1 knot at strength of current. On the E side of the island in Etolin Strait, it is stated that tidal currents are so strong that the middle portion does not freeze over in winter. (See the Tidal Current Tables for predictions off the W coast of Nunivak Island.)

(450) Ice.-(See page T-21 for dates of ice breakup and freezeup.) Navigation is difficult from mid-December to mid-May and usually is suspended from early January to late March.

(451) St. Matthew Island and adjoining islands are 145 miles W from Nunivak Island. They are rocky, uninhabited islands whose shores are poorly charted except for a small area between Sugarloaf Mountain and Pinnacle Island. St. Matthew Island is a succession of hills and low valleys. During the season of navigation, fog is prevalent in this vicinity. Anchorage can be made with an offshore wind on the N or S sides of the island.

(452) Cape Upright, the E point of St. Matthew Island, is high and vertical, and the land in its immediate vicinity is mountainous. A mountain 1,505 feet high is 0.7 mile back of the cape, and another mountain 1,280 feet high is 0.9 mile SW of the cape. Off the cape is a detached rock 25 feet high. W of the highland of the cape is a low neck, apparently of sand, and the cape might be easily mistaken for a detached island.

(453) Glory of Russia Cape, the N point of St. Matthew Island, is also high and mountainous. A 1,475-foot peak is about 1.3 miles S of the cape.

(454) Numerous detached rocks along the shores of St. Matthew Island should not be approached too closely. On the island is an abundance of freshwater in streams and lakes.

(455) Sugarloaf Mountain, 1,380 feet high, is 11.5 miles W from Cape Upright. From Sugarloaf Mountain the coast trends about 0.8 mile SE to the westernmost point of a wide bight that extends to Cape Upright. A rock is about 350 yards S of this point.

(456) Good anchorage may be had in about 14 fathoms, sheltered from winds between SE and SW, in a bight on the E side of St. Matthew Island, about 10 miles NW of Cape Upright, with Sugarloaf Mountain bearing 220°, and W of some rocks which show well out of the water and should not be approached closely. Landing is difficult with any swell, as the beach is stony and steep. In 1951, the PATHFINDER anchored frequently in 9 to 10 fathoms, about 3.5 miles WNW of Sugarloaf Mountain, with broken bottom and satisfactory holding ground. The PATHFINDER also anchored in about 14 fathoms, with protection from N gales, 4 miles E by S of Sugarloaf Mountain.

(457) Sarichef Strait is a 2.5-mile-wide passage between St. Matthew Island and Hall Island. Tidal currents and rips were not found to be strong in 1951. The PATHFINDER obtained a least depth of 10 fathoms in two passages of the

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ST PAUL ISLAND, ALASKA (57°09'N, 170°13'W) Elevation 22 ft. (6.7m)

WEATHER ELEMENTS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE														
Mean (Millibars)	1004.6	1001.4	1008.9	1008.9	1010.8	1012.2	1013.4	1009.8	1006.4	1003.7	1002.7	1003.8	1007.2	19
TEMPERATURE (DEGREES F)														
Mean	26.1	23.7	23.8	28.5	34.8	40.9	45.7	47.5	44.4	37.8	33.2	27.8	34.5	29
Mean Daily Maximum	30.1	27.4	28.6	32.5	38.8	45.0	49.4	50.8	48.2	41.7	38.9	31.7	38.4	29
Mean Daily Minimum	22.0	18.8	19.0	24.4	31.0	36.7	42.0	44.1	40.6	33.8	29.5	23.8	30.5	29
Extreme Highest	48	44	44	44	56	62	63	64	59	54	50	52	64	58
Extreme Lowest	-20	-15	-19	-2	8	24	28	30	25	13	9	-5	-20	58
RELATIVE HUMIDITY														
Average Percentage	85.8	86.3	85.1	88.1	90.2	91.7	94.8	93.8	89.0	82.8	84.4	82.7	87.9	25
CLOUD COVER														
Average Amount (Tenths)	8.0	8.0	8.0	8.5	9.0	9.1	8.5	8.5	8.8	8.3	8.2	8.1	8.8	23
PRECIPITATION														
Mean Amount (Inches)	1.84	1.37	1.28	1.09	1.28	1.25	2.23	3.44	3.02	3.15	2.58	2.03	24.56	29
Greatest Amount (Inches)	4.09	5.69	3.28	3.10	3.11	3.59	5.85	9.32	8.02	5.18	5.31	4.18	0	51
Least Amount (Inches)	0.25	0.33	0.08	0.18	0.21	0.18	0.32	1.32	1.05	1.03	0.87	0.08	0	51
Maximum in 24 hrs (Inches)	1.38	1.51	1.28	1.90	1.27	1.40	1.92	1.91	1.58	1.93	1.78	1.15	1.93	51
Mean Amount of Snow (Inches)	12.8	10.3	9.4	5.8	2.3	0.1	0.0	0.0	0.1	2.7	5.9	9.7	51.1	50
Mean Number of Days with Precipitation	25	24	28	26	28	23	27	27	26	29	28	27	310	21
Snow (Mean Number of Days)	21	22	24	21	13	2	0	0	1	14	20	23	287	21
WIND														
Percent of Observations with Gales	3.9	4.7	3.2	1.5	0.3	*	0	0.2	0.8	3.1	2.8	3.5	2.1	24
Mean Wind Speed (Knots)	17.0	17.8	18.3	15.1	13.4	11.4	10.7	12.4	13.5	16.5	16.8	17.4	14.9	25
Direction (Percentage of Obs.)														
North	9.9	12.2	9.4	8.6	8.5	7.1	5.1	4.4	7.7	9.5	9.4	10.4	8.6	25
North Northeast	10.1	14.8	9.5	7.5	7.5	6.5	3.8	3.1	5.6	8.0	10.2	12.6	8.2	25
Northeast	7.1	8.8	7.4	8.1	5.8	7.4	3.4	2.8	4.8	3.5	5.7	8.3	6.1	25
East Northeast	9.0	8.2	9.7	8.3	6.2	7.7	4.2	2.7	3.0	3.3	8.8	7.7	6.3	25
East	10.5	7.0	8.1	5.1	6.1	5.9	6.2	3.5	4.1	3.9	6.3	6.8	6.1	25
East Southeast	7.5	6.5	6.3	6.8	6.0	7.5	5.4	3.4	3.7	3.5	5.3	8.2	5.7	25
Southeast	6.5	5.6	4.5	4.3	5.2	6.1	6.2	4.9	4.2	3.1	3.7	5.0	4.9	25
South Southeast	5.0	4.8	4.5	4.8	5.2	4.5	5.4	5.5	5.2	2.4	4.5	4.5	4.7	25
South	6.1	5.3	5.4	8.7	7.4	8.1	9.4	10.1	7.2	5.8	5.5	5.1	8.8	25
South Southwest	4.1	4.8	4.7	4.5	6.5	4.3	8.9	10.5	6.5	4.7	4.5	4.0	5.6	25
Southwest	3.2	3.5	3.3	4.5	4.1	3.8	6.8	10.5	5.2	5.3	5.3	3.6	4.9	25
West Southwest	2.7	3.6	3.3	5.0	5.1	5.5	8.1	9.4	5.1	5.6	5.2	2.5	5.0	25
West	3.1	3.4	3.7	4.0	4.3	5.7	8.8	9.1	7.5	9.2	6.3	3.8	5.7	25
West Northwest	3.0	2.8	3.7	5.3	4.0	4.5	4.7	5.5	6.9	8.4	5.1	3.7	4.8	25
Northwest	4.1	2.7	6.6	8.8	6.8	7.1	6.8	8.0	12.1	13.7	8.8	7.2	7.7	25
North Northwest	5.5	5.1	8.1	8.7	8.6	7.5	5.2	5.2	9.4	9.4	6.3	6.8	7.2	25
Calm	2.5	1.6	1.8	1.4	1.4	1.0	1.7	1.6	1.8	1.5	1.4	1.7	1.6	25
Direction (Mean Speed, knots)														
North	18.5	19.2	18.9	15.8	14.4	12.1	10.7	12.9	13.5	15.9	15.8	17.0	16.0	21
North Northeast	17.4	18.3	14.5	14.0	15.5	13.1	11.7	11.9	13.4	18.6	15.6	17.9	15.8	25
Northeast	19.1	19.8	18.2	14.4	15.4	12.6	11.6	14.0	14.4	16.5	16.6	20.2	16.7	25
East Northeast	18.9	19.8	19.5	15.4	14.8	11.3	10.8	13.4	13.7	18.7	17.9	19.5	16.9	25
East	18.3	19.4	18.8	16.0	12.7	11.5	10.1	12.5	13.9	19.8	18.4	19.9	16.4	25
East Southeast	17.1	17.7	18.4	15.0	12.8	10.3	9.7	11.9	13.6	18.1	19.4	19.1	15.3	25
Southeast	16.8	16.0	14.8	14.4	12.7	11.5	10.4	12.0	13.1	18.9	17.9	19.2	14.8	25
South Southeast	16.0	16.9	14.5	14.7	12.7	10.1	10.4	11.8	15.8	17.7	17.1	17.8	14.6	25
South	16.5	18.3	15.5	16.1	12.4	10.3	10.4	12.5	14.5	18.1	18.3	16.8	14.5	25
South Southwest	17.2	18.8	15.7	15.4	13.1	11.3	10.9	13.5	15.0	16.7	17.7	17	14.8	25
Southwest	16.3	16.9	18.1	15.1	13.9	11.5	10.9	13.9	14.6	16.0	16.5	16.4	14.6	25
West Southwest	15.8	16.5	18.6	14.0	11.8	10.5	11.4	12.4	13.0	16.7	16.7	15.9	13.8	25
West	14.7	15.8	14.5	14.0	11.2	11.2	11.5	11.2	11.5	15.0	14.2	15.5	13.0	25
West Northwest	14.7	15.1	14.8	13.9	13.1	10.7	11.3	11.9	11.5	14.7	15.1	13.9	13.4	25
Northwest	16.4	14.8	18.2	15.1	13.9	12.6	12.2	12.9	13.7	16.7	16.3	15.3	14.9	25
North Northwest	17.7	17.4	18.7	17.1	14.5	12.7	11.2	13.0	14.4	17.5	17.0	16.9	15.7	25
VISIBILITY														
Mean Number of Days with Fog	12	10	12	15	20	24	28	28	15	9	10	9	190	21

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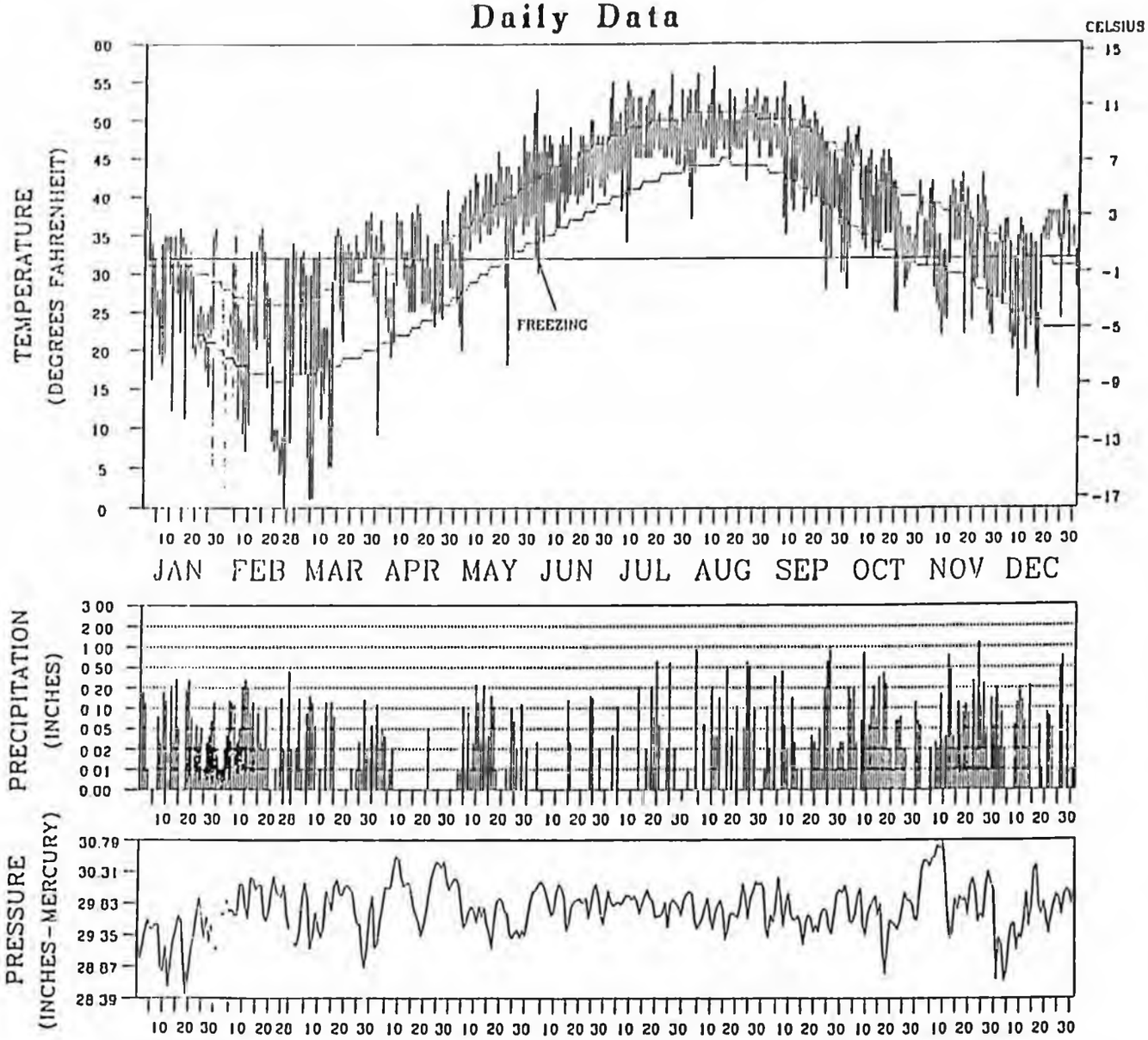
ISSN 0190-0513

1990 LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA
ST. PAUL ISLAND,
ALASKA

Daily Data



TEMPERATURE DEPICTS NORMAL MAXIMUM, NORMAL MINIMUM AND ACTUAL DAILY HIGH AND LOW VALUES (FAHRENHEIT)
PRECIPITATION IS MEASURED IN INCHES. SCALE IS NON-LINEAR
STATION PRESSURE IS MEASURED IN INCHES OF MERCURY

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER, ASHEVILLE, NORTH CAROLINA, 28801

Kenneth D Hadley
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

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AMP Ex. C

METEOROLOGICAL DATA FOR 1990

ST. PAUL ISLAND, ALASKA

LATITUDE: 57°09' N LONGITUDE: 170°13' W ELEVATION: FT. GRND 22 BARO 20 TIME ZONE: YUKON WBAN: 25713

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:													
Averages													
-Daily Maximum	31.5	25.9	31.4	33.9	42.0	47.4	51.6	52.0	49.0	42.1	37.7	35.4	40.0
-Daily Minimum	22.4	13.2	21.1	27.2	33.4	39.1	44.0	45.8	39.1	34.2	29.3	28.3	31.4
-Monthly	27.0	19.6	26.3	30.6	37.7	43.3	47.8	48.9	44.1	38.2	33.5	31.9	35.7
-Monthly Dept	24.0	15.8	24.3	27.0	32.1	38.9	45.2	47.2	40.7	34.6	28.0	29.4	32.3
Extremes													
-Highest	39	36	38	41	51	54	56	57	55	49	43	40	57
-Date	1	15	20	27	31	1	24	9	6	5	24	27	AUG 9
-Lowest	5	0	1	19	18	30	34	37	28	25	22	14	0
-Date	27	24	6	5	21	2	7	1	23	21	28	8	FEB 24
DEGREE DAYS BASE 65 °F:													
Heating	1172	1265	1193	1027	840	648	525	494	619	825	935	1023	10566
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
% OF POSSIBLE SUNSHINE													
AVG. SKY COVER (tenths)													
Sunrise - Sunset	9.1	8.3	8.0	8.3	9.3	9.7	9.7	9.7	8.5	8.9	8.8	9.1	9.0
Midnight - Midnight	8.8	8.2	7.9	8.7	9.2	9.8	9.7	9.8	8.4	8.7	8.7	8.8	8.9
NUMBER OF DAYS:													
Sunrise to Sunset													
-Clear	1	0	2	4	0	0	0	0	2	0	1	2	12
-Partly Cloudy	2	8	6	1	5	1	0	1	4	4	3	2	37
-Cloudy	28	20	23	25	26	29	31	30	24	27	25	27	316
Precipitation .01 inches or more	25	24	18	7	20	6	11	15	22	27	25	20	220
Snow, Ice pellets 1.0 inches or more	10	10	8	1	0	0	0	0	0	0	4	4	37
Thunderstorms	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Fog, visibility 1/4 mile or less	0	0	2	4	4	6	7	12	3	0	0	9	47
Temperature °F													
-Maximum													
70° and above	0	0	0	0	0	0	0	0	0	0	0	0	0
32° and below	15	20	13	11	1	0	0	0	0	0	2	4	66
-Minimum													
32° and below	30	27	29	27	6	2	0	0	4	12	21	18	176
0° and below	0	1	0	0	0	0	0	0	0	0	0	0	1
AVG. STATION PRESS. (mb)	990.5	1010.5	1004.1	1015.2	1003.4	1011.2	1009.5	1007.8	1003.1	1004.1	1018.0	1001.7	1006.4
RELATIVE HUMIDITY (%)													
Hour 03	87	81	90	89	84	91	96	99	90	87	84	90	89
Hour 09 (Local Time)	85	80	90	90	83	89	95	98	89	89	84	89	88
Hour 15	86	84	86	82	79	84	89	92	81	82	78	89	84
Hour 21	84	86	89	85	82	86	92	96	90	84	83	87	87
PRECIPITATION (inches):													
Water Equivalent													
-Total	2.50	2.45	1.25	0.31	1.56	0.53	2.01	3.43	3.38	3.69	4.39	2.87	28.37
-Greatest (24 hrs)	0.39	0.45	0.21	0.12	0.33	0.21	0.65	0.94	1.04	0.87	1.22	0.78	1.22
-Date	18-19	27	6- 7	1	10-11	24-25	20	4	26	8- 9	24	27-28	NOV 24
Snow, Ice pellets													
-Total	23.4	25.1	16.6	2.9	0.1	0.0	0.0	0.0	0.2	3.3	9.7	7.2	88.5
-Greatest (24 hrs)	5.7	4.3	2.7	1.0	0.1	0.0	0.0	0.0	0.2	0.8	2.5	1.9	5.7
-Date	18-19	27	6- 7	1	3				29	23	8- 9	10	JAN 18-19
WIND:													
Resultant													
-Direction (11)	019	001	057	349	114	288	161	194	332	278	265	070	349
-Speed (mph)	4.9	5.7	6.0	10.8	4.7	3.7	1.9	8.1	4.3	7.8	6.1	7.8	1.8
Average Speed (mph)	20.6	19.1	16.6	16.3	14.9	12.8	13.0	13.7	16.0	15.8	18.5	19.3	16.4
Fastest Obs 1 Min.													
-Direction (11)	05	09	34	09	13	24	13	17	36	31	28	09	28
-Speed (mph)	49	46	36	43	28	26	33	31	45	33	56	53	56
-Date	18	10	12	1	10	21	20	25	26	24	25	1	NOV 25
Peak Gust													
-Direction (11)	NE	E	N	E	SE	SW	SE	S	N	W	SW	E	SW
-Speed (mph)	61	59	41	55	38	37	47	43	59	51	84	67	84
-Date	18	10	12	1	10	20	20	25	26	12	25	1	NOV 25

(11) See Reference Notes on Page 68

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NORMALS, MEANS, AND EXTREMES

ST. PAUL ISLAND, ALASKA

LATITUDE: 57°09'N LONGITUDE: 170°13'W ELEVATION: FT. GRND 22 BARO 28 TIME ZONE: YUKON WBAN: 25713

	Yrs	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:														
Normals														
-Daily Maximum		30.4	26.4	28.2	32.0	38.6	45.1	49.4	50.8	48.4	41.7	37.2	32.2	38.4
-Daily Minimum		22.2	17.3	18.5	23.4	30.9	36.8	41.9	44.1	40.5	33.5	29.4	24.0	30.2
-Monthly		26.3	21.9	23.3	27.7	34.8	40.9	45.7	47.5	44.5	37.6	33.3	28.1	34.3
Extremes														
-Record Highest	73	48	44	50	48	58	62	63	66	61	54	50	52	66
-Year		1976	1947	1980	1980	1979	1976	1977	1987	1979	1976	1975	1936	AUG 1987
-Record Lowest	73	-26	-15	+19	-8	8	16	28	29	25	12	4	-5	-26
-Year		1979	1984	1971	1976	1971	1985	1961	1981	1989	1983	1988	1916	JAN 1979
NORMAL DEGREE DAYS:														
Heating (base 65°F)		1200	1207	1293	1119	936	723	598	643	615	849	951	1144	11178
Cooling (base 65°F)		0	0	0	0	0	0	0	0	0	0	0	0	0
% OF POSSIBLE SUNSHINE														
MEAN SKY COVER (tenths)														
Sunrise - Sunset:	57	8.3	8.1	7.9	8.3	8.9	9.0	9.4	9.3	8.8	9.5	8.4	8.5	8.6
MEAN NUMBER OF DAYS:														
Sunrise to Sunset														
-Clear	61	2.4	2.5	3.2	2.1	1.2	1.2	0.9	0.7	0.7	0.7	1.2	1.5	16.2
-Partly Cloudy	61	5.7	6.0	7.3	6.0	3.9	3.1	2.3	2.7	5.5	7.4	6.4	5.5	61.7
-Cloudy	61	23.0	19.7	20.5	21.8	25.9	25.7	27.1	27.5	23.7	22.9	22.4	24.0	285.2
Precipitation														
.01 inches or more	72	18.3	14.8	15.6	14.4	14.2	10.5	15.4	18.5	19.8	22.2	21.6	19.7	207.0
Snow, Ice pellets														
1.0 inches or more	64	3.6	3.5	3.0	1.4	0.8	0.*	0.0	0.0	0.*	0.4	2.2	3.3	18.4
Thunderstorms	49	0.0	0.0	0.0	0.0	0.0	0.*	0.0	0.0	0.0	0.0	0.*	0.0	*
Heavy Fog Visibility														
1/4 mile or less	49	2.0	2.7	3.2	3.2	7.1	9.8	12.8	10.3	3.9	0.7	0.8	1.1	57.5
Temperature														
-Maximum														
70° and above	73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32° and below	71	14.9	16.5	16.9	10.9	2.1	0.0	0.0	0.0	0.0	0.5	5.6	12.5	79.8
-Minimum														
32° and below	73	26.3	26.3	29.2	26.9	18.9	3.2	0.2	0.1	1.6	10.3	19.1	25.2	187.6
0° and below	73	1.0	2.5	1.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.4
AVG. STATION PRESS. (mb)	5	997.3	1006.2	1004.2	1007.0	1005.9	1011.3	1013.4	1009.4	1005.7	1004.9	1003.9	997.8	1005.6
RELATIVE HUMIDITY (%)														
Hour 03	12	83	85	86	86	90	94	96	96	91	84	82	83	88
Hour 09	12	83	85	86	96	89	92	95	96	90	84	83	85	88
Hour 15 Local Time	13	83	84	82	81	82	83	89	90	84	79	80	84	83
Hour 21	6	85	89	87	87	87	89	94	94	90	84	82	84	88
PRECIPITATION (inches):														
Water Equivalent														
-Normal		1.78	1.28	1.26	1.21	1.23	1.24	2.02	3.07	2.52	2.95	2.49	1.76	22.7
-Maximum Monthly	68	4.99	5.69	3.28	3.21	3.11	3.59	5.85	9.32	6.02	6.21	5.31	4.18	9.32
-Year		1964	1964	1973	1979	1931	1950	1950	1953	1924	1987	1925	1949	AUG 1953
-Minimum Monthly	68	0.25	0.02	0.08	0.16	0.21	0.18	0.32	0.17	0.62	0.96	0.67	0.09	0.02
-Year		1919	1984	1960	1948	1948	1954	1931	1977	1977	1977	1939	1933	FEB 1984
-Maximum in 24 hrs	68	1.38	1.51	1.26	1.00	1.27	1.48	1.92	2.00	1.58	1.93	1.76	1.15	2.00
-Year		1964	1932	1973	1965	1931	1949	1950	1984	1947	1949	1925	1930	AUG 1984
Snow, Ice pellets														
-Maximum Monthly	67	40.6	35.8	31.4	19.1	12.7	2.0	0.0	0.0	1.0	14.0	27.3	22.7	55.6
-Year		1931	1964	1973	1928	1971	1927			1965	1948	1964	1930	FEB 1964
-Maximum in 24 hrs	66	13.8	13.6	12.4	10.0	4.0	2.0	0.0	0.0	1.0	10.9	13.4	8.0	13.8
-Year		1964	1964	1973	1966	1935	1927			1965	1978	1964	1930	JAN 1964
WIND:														
Mean Speed (mph)	10	20.4	21.1	19.4	18.6	15.5	13.9	12.4	14.2	15.9	18.6	21.0	21.9	17.7
Prevailing Direction														
Fastest Obs. 1 Min														
-Direction (!!)	24	20	03	05	17	23	05	18	25	14	28	35	26	35
-Speed (MPH)	24	63	69	72	51	54	44	39	46	53	60	82	62	82
-Year		1969	1964	1975	1973	1985	1955	1973	1978	1964	1964	1964	1970	NOV 1964
Peak Gust														
-Direction (!!)	11		N	N	SE	SW	S	SE	N	N	W	SW	N	SW
-Speed (mph)	11	63	72	67	67	74	53	47	58	61	70	84	75	84
-Date		1969	1987	1987	1987	1985	1982	1990	1980	1985	1989	1990	1980	NOV 1990

(!!) See Reference Notes on Page 68.

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PRECIPITATION (inches)

ST. PAUL ISLAND, ALASKA

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1961	3.32	0.40	0.89	1.73	1.01	1.22	2.33	1.35	3.45	3.85	4.31	2.98	26.84
1962	1.08	1.22	1.69	1.05	1.98	0.93	1.97	1.89	2.20	2.41	2.15	1.24	22.81
1963	2.03	0.37	2.37	2.15	1.30	2.19	4.29	2.89	2.37	2.60	1.24	2.13	26.53
1964	4.99	5.69	2.65	1.78	1.84	0.68	1.51	2.39	4.45	4.55	3.84	2.24	36.61
1965	3.65	1.59	1.92	1.52	1.35	0.94	2.67	3.97	2.87	1.45	3.84	2.65	28.42
1966	2.87	2.65	1.64	2.09	2.24	0.35	1.41	2.21	2.49	2.37	3.44	1.05	24.81
1967	2.02	1.64	1.85	3.10	0.71	1.21	1.45	2.59	1.59	1.89	3.20	2.70	23.95
1968	1.63	0.49	0.84	0.94	0.79	0.35	2.81	2.29	1.86	3.77	2.59	2.74	21.10
1969	2.25	1.68	0.71	1.00	1.28	0.68	1.32	4.01	1.44	2.30	1.92	0.98	19.57
1970	0.88	0.96	1.24	1.36	0.76	1.45	1.91	1.52	2.24	3.01	2.34	3.63	21.30
1971	0.83	1.03	1.14	0.83	0.94	0.73	2.77	2.78	2.64	2.11	2.03	3.30	21.13
1972	1.45	0.80	1.22	1.83	0.98	1.80	1.28	1.69	3.21	3.52	2.50	1.44	21.72
1973	1.79	3.34	3.28	0.60	1.08	1.07	1.18	2.40	1.64	2.75	3.23	2.22	24.58
1974	2.11	1.33	0.75	0.88	1.26	1.42	2.40	3.29	1.39	1.42	1.63	1.55	19.43
1975	1.47	1.54	1.02	1.30	0.50	1.07	1.20	1.40	1.45	2.07	0.88	0.73	14.63
1976	0.74	0.80	0.74	1.22	1.48	0.90	1.58	1.50	1.44	1.57	0.94	0.76	13.67
1977	0.57	0.89	1.41	1.09	1.19	0.31	0.86	0.17	0.62	0.96	1.10	0.65	9.82
1978	0.61	0.47	0.53	0.92	0.74	1.33	2.52	2.72	1.87	4.45	2.10	1.95	20.21
1979	2.62	1.01	1.22	3.21	1.52	2.18	2.67	2.57	3.51	3.79	4.78	1.19	30.27
1980	1.13	0.37	0.99	0.76	0.83	3.05	1.20	3.78	2.82	2.85	2.06	0.84	20.69
1981	1.58	0.52	0.79	0.54	1.45	1.15	0.85	2.50	1.07	2.48	2.63	1.01	16.57
1982	0.95	0.38	1.47	0.65	1.40	1.08	1.82	1.64	2.31	1.99	3.01	2.17	18.67
1983	0.28	1.09	0.14	2.43	1.08	0.55	2.39	3.44	2.34	2.22	3.32	3.98	23.26
1984	1.22	0.02	0.31	0.48	0.82	0.85	0.91	4.09	2.93	1.76	3.77	3.54	20.70
1985	2.86	0.84	1.56	1.23	2.04	1.91	1.04	2.27	3.75	4.22	4.56	2.41	28.69
1986	1.11	0.39	0.09	0.83	1.17	1.23	3.25	5.50	4.81	2.45	3.61	3.19	27.63
1987	3.36	1.99	2.02	1.53	1.47	2.94	3.13	3.46	4.69	6.21	1.24	3.28	35.32
1988	1.38	1.40	0.28	1.32	1.74	1.73	0.36	3.93	2.59	2.58	3.53	3.37	24.21
1989	2.12	2.56	0.53	2.33	1.91	0.95	2.00	1.81	3.61	2.94	3.92	1.77	26.45
1990	2.50	2.45	1.25	0.31	1.56	0.53	2.01	3.43	3.38	3.69	4.39	2.87	28.37
Record Mean	1.76	1.23	1.20	1.13	1.24	1.24	2.15	3.13	3.02	2.98	2.63	1.94	23.62

See Reference Notes on Page 6B.
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AVERAGE TEMPERATURE (deg. F)

ST. PAUL ISLAND, ALASKA

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1961	27.3	17.9	18.8	28.4	37.2	41.4	44.9	46.6	45.0	37.8	33.8	22.2	33.5
1962	20.1	28.9	26.2	29.0	33.8	40.6	46.7	47.4	42.1	36.1	32.0	27.1	34.2
1963	30.3	21.2	29.2	29.3	36.1	40.2	45.3	46.2	43.9	36.0	29.7	29.9	34.8
1964	26.5	15.5	22.9	29.3	34.3	41.9	44.9	46.7	43.1	37.1	31.3	29.6	33.6
1965	22.6	16.7	24.4	29.6	32.7	39.7	44.7	46.4	43.9	35.5	34.3	27.6	33.2
1966	32.5	30.4	21.8	27.8	33.6	40.7	45.5	46.8	44.1	35.0	34.8	27.7	35.1
1967	28.9	27.9	33.2	35.6	38.2	44.0	48.2	49.5	45.4	37.8	35.3	31.2	37.9
1968	30.1	17.6	23.8	25.2	33.9	39.2	45.8	47.4	42.9	37.0	33.3	29.9	33.9
1969	31.7	24.2	25.5	29.6	36.7	42.1	48.3	49.9	46.5	39.1	32.5	29.4	36.3
1970	19.5	26.3	25.3	26.4	34.2	41.2	45.0	45.5	43.9	38.8	36.9	29.2	34.4
1971	23.3	15.3	14.9	21.5	27.8	36.2	41.9	44.5	42.3	37.8	32.4	30.0	30.6
1972	25.9	14.6	10.9	25.0	32.8	37.7	42.5	45.9	44.0	37.8	33.2	30.0	31.7
1973	23.1	25.5	20.1	26.3	30.4	39.4	44.3	45.9	43.9	37.5	37.2	27.4	33.4
1974	26.4	14.9	25.9	25.0	35.3	39.4	45.4	47.3	44.8	36.2	29.6	21.6	32.7
1975	17.6	15.3	19.7	27.4	32.2	38.1	43.7	47.4	42.5	36.2	29.3	29.3	31.6
1976	22.0	9.0	12.8	17.3	30.7	39.9	45.1	47.6	43.2	37.8	31.3	23.6	30.0
1977	30.6	27.4	23.2	26.3	36.1	43.3	48.7	51.1	47.8	37.0	30.0	31.1	36.1
1978	33.6	27.4	25.5	34.9	38.9	44.2	46.5	48.7	47.5	39.2	38.0	32.1	38.1
1979	34.3	30.0	30.4	36.1	40.6	46.7	48.7	50.5	48.1	43.3	36.7	31.5	39.8
1980	27.2	23.7	31.6	30.9	38.1	44.5	47.5	46.5	44.2	37.1	33.9	29.9	36.3
1981	27.9	23.9	30.7	34.3	40.4	43.0	47.8	47.3	44.3	37.7	30.8	28.1	36.4
1982	26.4	27.6	29.5	29.9	35.2	41.4	44.2	48.4	42.8	38.3	34.8	29.6	35.6
1983	22.4	28.3	27.8	31.8	36.9	43.7	47.3	48.1	44.1	36.9	30.8	34.4	36.1
1984	26.8	9.9	24.7	26.0	33.5	43.3	46.2	48.9	46.1	39.0	34.5	32.8	34.3
1985	33.8	23.5	21.9	20.2	34.8	38.7	45.8	47.5	44.4	37.2	37.2	33.9	34.9
1986	22.1	25.7	20.4	27.9	35.9	42.5	47.3	47.8	46.5	39.1	35.2	31.7	35.2
1987	27.4	27.9	29.4	29.5	36.6	42.9	47.7	49.3	43.4	38.5	28.1	25.9	35.6
1988	27.3	24.2	17.8	25.8	35.1	42.2	47.7	48.7	44.9	39.2	29.5	27.5	34.2
1989	22.3	34.1	30.4	33.8	37.8	42.6	47.3	49.8	47.1	40.2	30.2	29.4	37.1
1990	27.6	19.6	26.3	30.6	37.7	43.3	47.8	48.9	44.1	38.2	33.5	31.9	35.7
Record Mean	25.8	23.0	24.2	28.7	35.0	41.3	45.9	47.7	44.7	38.3	33.2	28.8	34.7
Max	29.7	27.3	28.9	32.9	39.1	45.6	49.5	50.9	48.5	42.1	36.8	32.6	38.7
Min	21.8	18.6	19.5	24.4	31.0	37.0	42.2	44.4	40.9	34.5	29.5	24.9	30.7

See Reference Notes on Page 6B.
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HEATING DEGREE DAYS Base 65 deg. F

ST. PAUL ISLAND, ALASKA

SEASON	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
1961-62	616	562	591	835	929	1320	1388	1004	1198	1074	961	726	11206
1962-63	56.	536	681	889	982	1172	1068	1221	1101	1065	890	738	10904
1963-64	600	573	624	891	1052	1080	1189	1433	1298	1063	947	686	11436
1964-65	615	562	650	857	1004	1091	1307	1347	1252	1054	995	750	11484
1965-66	622	569	620	907	917	1153	1002	963	1334	1111	965	724	10895
1966-67	599	559	619	926	901	1151	1113	1033	980	876	824	622	10203
1967-68	511	474	581	836	883	1040	1079	1367	1271	1184	954	769	10949
1968-69	589	539	652	858	946	1079	1022	1135	1216	1056	872	681	10645
1969-70	512	459	548	798	967	1097	1404	1079	1224	1154	949	707	10898
1970-71	611	598	624	806	818	1104	1288	1388	1552	1300	1148	859	12116
1971-72	713	628	677	835	872	1079	1205	1458	1670	1193	993	813	12236
1972-73	691	585	625	840	947	1077	1292	1102	1385	1156	1064	760	11524
1973-74	634	586	625	848	827	1157	1188	1397	1204	1194	914	758	11332
1974-75	604	539	598	882	1053	1337	1462	1389	1399	1120	1013	799	12195
1975-76	653	539	670	886	1064	1102	1327	1622	1612	1422	1055	745	12697
1976-77	610	532	649	838	1006	1280	1059	1048	1291	1156	889	642	11000
1977-78	439	420	508	862	1043	1045	968	1049	1216	896	803	616	9925
1978-79	564	496	518	792	802	1011	946	976	1065	860	747	548	9325
1979-80	497	444	501	667	843	1030	1165	1190	1030	1016	823	608	9814
1980-81	532	568	617	861	924	1079	1142	1145	1057	916	757	651	10249
1981-82	527	541	613	839	1018	1138	1188	1044	1093	1074	915	702	10692
1982-83	638	507	661	819	900	1092	1313	1019	1147	988	868	632	10584
1983-84	541	519	620	862	1018	942	1178	1592	1245	1166	968	646	11297
1984-85	579	492	561	796	909	993	959	1154	1326	1338	926	783	10816
1985-86	589	537	612	852	824	957	1323	1093	1378	1104	895	670	10834
1986-87	543	527	546	796	885	1029	1160	1034	1098	1057	871	656	10202
1987-88	526	480	642	816	1097	1205	1160	1179	1454	1170	916	677	11322
1988-89	530	499	595	792	1059	1155	1319	859	1067	930	834	666	10305
1989-90	543	463	532	763	1037	1093	1172	1265	1193	1027	840	648	10576
1990-91	525	494	619	825	935	1023							

See Reference Notes on Page 6B.

COOLING DEGREE DAYS Base 65 deg. F

ST. PAUL ISLAND, ALASKA

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0

See Reference Notes on Page 6B.

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SNOWFALL (inches)

ST. PAUL ISLAND, ALASKA

SEASON	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
1961-62	0.0	0.0	0.0	5.9	9.3	16.6	6.0	4.9	7.6	4.9	7.5	T	62.7
1962-63	0.0	0.0	0.0	5.3	8.0	11.9	1.6	2.8	9.5	15.7	0.2	T	55.0
1963-64	0.0	0.0	T	3.5	6.1	7.5	35.7	55.8	10.1	11.1	1.6	0.0	139.4
1964-65	0.0	0.0	0.0	2.9	27.3	6.5	28.3	11.0	9.0	4.0	2.7	1.6	93.3
1965-66	0.0	0.0	1.0	3.7	8.1	8.9	5.7	16.0	16.3	14.3	1.2	0.0	75.2
1966-67	0.0	0.0	0.0	8.3	4.0	5.9	10.2	15.2	9.0	2.9	T	0.0	55.5
1967-68	0.0	0.0	0.0	7.2	7.9	14.6	6.0	3.9	12.7	9.7	4.0	0.2	66.2
1968-69	0.0	0.0	T	10.1	10.2	10.0	11.7	16.4	12.1	7.3	3.3	0.0	81.1
1969-70	0.0	0.0	0.0	0.8	4.9	8.7	14.7	8.7	12.0	8.5	1.3	0.1	59.7
1970-71	0.0	0.0	T	0.4	2.0	17.5	6.3	9.6	12.3	13.6	12.7	T	74.4
1971-72	0.0	0.0	0.0	4.3	5.1	13.1	12.9	9.3	10.8	15.6	3.2	T	74.3
1972-73	0.0	0.0	0.2	1.8	6.7	5.5	13.0	27.6	31.4	6.3	7.9	0.2	100.6
1973-74	0.0	0.0	0.0	3.8	3.9	12.4	7.7	11.0	5.6	8.9	2.2	T	55.5
1974-75	0.0	0.0	0.0	2.2	4.6	15.7	14.4	11.4	10.1	5.6	4.5	1.2	69.7
1975-76	0.0	0.0	0.4	2.0	5.9	4.7	9.4	7.9	7.9	6.8	1.0	0.0	45.9
1976-77	0.0	0.0	0.0	2.9	7.1	10.3	2.1	7.1	16.0	5.*	1.4	0.0	52.5
1977-78	0.0	0.0	0.0	1.6	7.9	3.9	2.9	5.2	5.9	0.4	T	0.0	27.8
1978-79	0.0	0.0	0.0	12.5	2.4	9.0	17.9	1.6	3.7	0.9	0.5	0.0	48.5
1979-80	0.0	0.0	T	T	14.6	8.7	8.5	5.0	12.1	9.6	1.7	0.0	60.2
1980-81	0.0	0.0	T	2.6	6.1	6.1	10.5	5.5	7.2	2.0	1.3	0.0	41.3
1981-82	0.0	0.0	0.0	0.9	9.1	4.8	2.1	1.5	5.8	3.0	T	0.0	27.2
1982-83	0.0	0.0	T	0.2	4.0	10.7	2.9	8.4	1.2	5.3	0.2	0.0	32.9
1983-84	0.0	0.0	T	4.8	7.4	1.7	6.5	0.2	3.0	3.0	3.3	0.0	29.9
1984-85	0.0	0.0	0.0	2.9	3.4	3.7	4.5	7.8	10.1	13.3	2.2	0.7	48.6
1985-86	0.0	0.0	0.0	1.7	2.5	3.7	12.6	3.2	1.1	4.8	1.9	0.0	31.5
1986-87	0.0	0.0	0.0	T	3.6	4.9	13.5	16.1	13.2	3.3	2.4	0.0	57.0
1987-88	0.0	0.0	T	0.9	10.3	18.6	6.5	7.0	4.9	11.7	1.9	0.0	61.8
1988-89	0.0	0.0	0.0	2.8	25.7			6.8	3.6	5.5	1.4	0.0	
1989-90	0.0	0.0	0.0	0.7	18.2	10.6	23.4	25.1	16.6	2.9	0.1	0.0	97.6
1990-91	0.0	0.0	0.2	3.3	9.7	7.2							
Record Mean	0.0	0.0	0.1	2.7	6.5	9.3	11.9	9.6	8.9	5.7	2.1	0.1	56.9

See Reference Notes on Page 6B.

REFERENCE NOTES

ST. PAUL ISLAND, ALASKA

GENERAL
T - TRACE AMOUNT
BLANK ENTRIES DENOTE MISSING/UNREPORTED DATA.
# INDICATES A STATION OR INSTRUMENT RELOCATION.
SEE STATION LOCATION TABLE ON PAGE 8.

SPECIFIC
PAGE 2
PM - INCLUDES LAST DAY OF PREVIOUS MONTH

PAGE 3
Tal - LENGTH OF RECORD IN YEARS, ALTHOUGH INDIVIDUAL MONTHS MAY BE MISSING.
0.* OR *. THE VALUE IS BETWEEN 0.0 AND 0.05
NORMALS - BASED ON THE 1951-1980 RECORD PERIOD.
EXTREMES - DATES ARE THE MOST RECENT OCCURRENCE
WIND DIR.- NUMERALS SHOW TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. '00' INDICATES CALM.
RESULTANT DIRECTIONS ARE GIVEN TO WHOLE DEGREES.

PAGE 4B
MAX AND MIN ARE LONG TERM MEAN DAILY MAXIMUM AND MEAN DAILY MINIMUM TEMPERATURES.

EXCEPTIONS

PAGE 3
1. MEAN WIND SPEED IS THROUGH 1974.
PAGES 4A, 4B, 6A
RECORD MEANS ARE THROUGH THE CURRENT YEAR, BEGINNING IN 1915 FOR TEMPERATURE
1915 FOR PRECIPITATION
1924 FOR SNOWFALL

AMP Ex. C

Page 6 of 8

ST. PAUL ISLAND,
ALASKA

St Paul Island, one of the Pribilof group, is located in the central-southeast Bering Sea area. The climate is typically maritime, resulting in considerable cloudiness, heavy fog, high humidity, and rather well restricted daily temperature ranges. Humidities remain uniformly high from May to late September, and during the summer period there is almost continuous low cloudiness and occasional heavy fog. The differences between the high and low temperatures for the entire year are only slightly above 7 degrees and the greatest monthly variation in March is slightly less than 12 degrees. Temperatures remain on the cool side even during the summer with extreme highs usually around the middle 50s. Although record low readings fall well below the zero mark, such extremely cold days are rather rare. There are only five days each winter with temperatures falling below the zero mark. The climatic environment makes the Pribilofs ideal for their numerous summer inhabitants, the Alaskan Fur Seals.

In spite of an environment of high humidities, precipitation on St Paul Island is surprisingly light. The annual average of near 24 inches is slightly below the average for Alaska as a whole. April is generally the driest month, with a gradual increase of precipitation until a monthly total of over 3 inches is reached during August, September, and October. This is followed by a gradual decrease during the succeeding months until the return of April.

Frequent windy periods are characteristic of the island area throughout the year. Frequent storms occur from October to April, and these often are accompanied by gale-force winds to produce general blizzard conditions. Under the influence of prolonged north and northeasterly winds between January and April, the ice pack occasionally moves south to surround the Island. During recent years, the southward limit of this movement has been between St. Paul and St. George Islands, some 40 miles to the southeast of St. Paul.

Thunderstorms are extremely rare on St. Paul Island.

AMP Ex. C

STATION LOCATION

SAINT PAUL ISLAND, ALASKA

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE SEA LEVEL GROUND TEMPERATURE	ELEVATION ABOVE GROUND SITE	WIND INSTRUMENTS	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE SWITCH	RIPING BUCKET	RAIN GAGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROTHERMOMETER	AUTOMATIC OBSERVING EQUIPMENT *	REMARKS
Naval Radio Station	8/08/15	7/17/20		57° 07'	170°16'				5	5					4			
Native Residence	7/17/20	12/15/23	1/8 mi. SW	57° 07'	170°16'				3	3					4			
FWS Company House	12/15/23	4/05/28	Approx. 800 ft. N	57° 07'	170°16'			10	4	4					4			
Weather Bureau Building	6/05/28	8/29/30	400 ft. SW	57° 07'	170°16'			26	4	4					4			Location of building indefinite.
Naval Radio Station	8/29/30	6/01/42	800 ft. NE	57° 07'	170°16'			a59	4	4					4			a - 64 ft. to 8/22/40.
Army Weather Station	11/1943	10/15/45	800 ft. SW	57° 07'	170°16'													
Weather Bureau Building	10/15/45	7/02/47		57° 07'	170°16'			29	5	5					2			
Weather Bureau Airport Station	7/02/47	9/10/51	3.4 mi. NE of Village	57° 09'	170°13'	22		39	5	5					2			s - Standby equipment.
Weather Bureau Airport Station*	9/10/51	Present	No Change	57° 09'	170°13'	22		c42 e30	s10 h	s10 h	NA	NA	NA	b6	NA b6	d5 f5 g5	NA	b - Added 8/1/60. c - Raised from 29 ft. in 1961. d - Commissioned 9/9/75 on site 66 ft. NE of instrument shelter. e - Moved to ground location 7/2/78. f - Minor adjustment 7/15/78. g - Type change 8/20/85. h - Instrument shelter removed 11/1987.

*Nat. Weather Service Building St. Paul Is. Airport eff. 12/1970.

* Type
H = AMOS
T = AUTOB
S = ASOS
W = AWOS

SUBSCRIPTION:
Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801.

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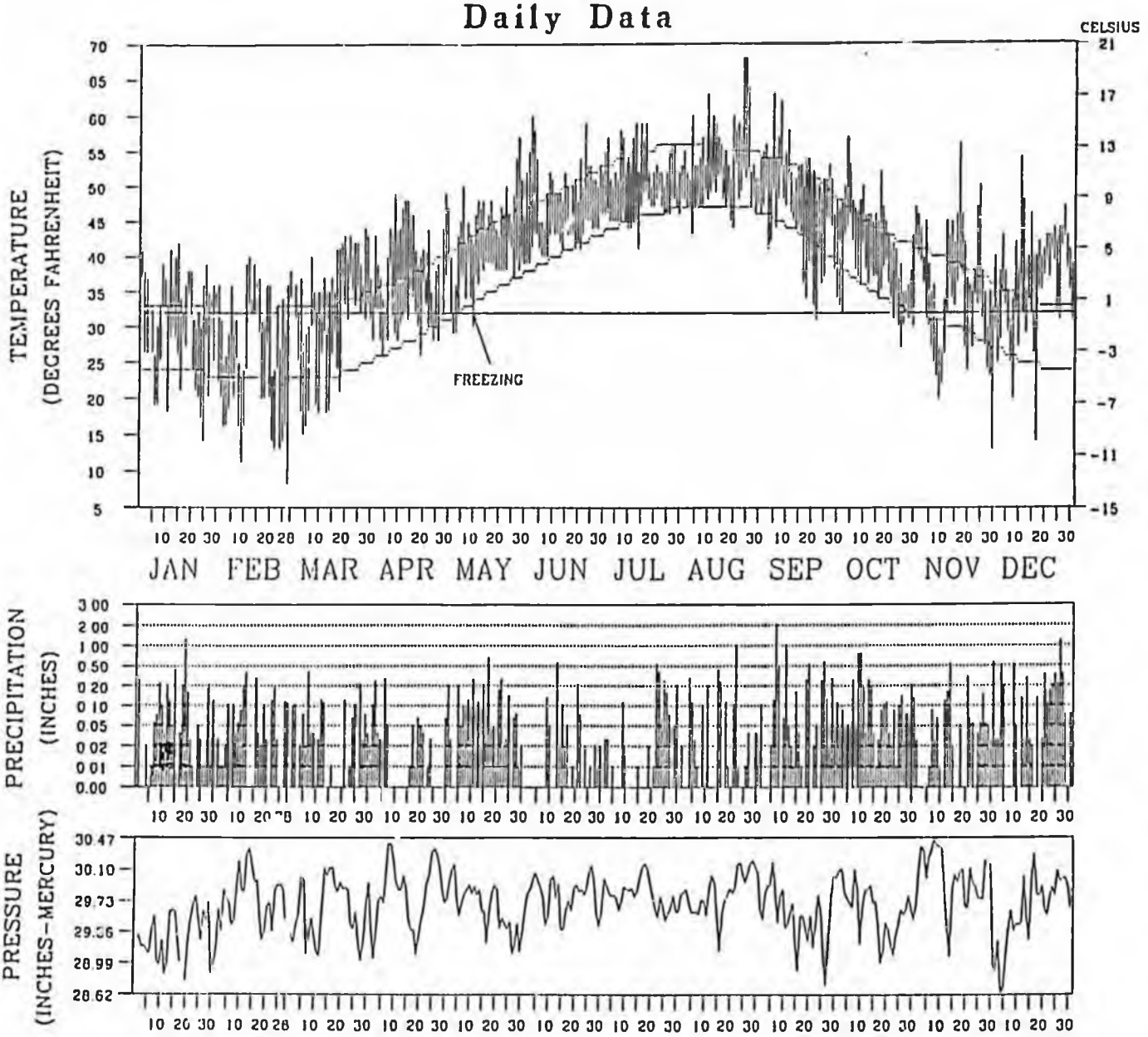
1990 LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA
COLD BAY, ALASKA

Daily Data



TEMPERATURE DEPICTS NORMAL MAXIMUM, NORMAL MINIMUM AND ACTUAL DAILY HIGH AND LOW VALUES (FAHRENHEIT)
PRECIPITATION IS MEASURED IN INCHES, SCALE IS NON-LINEAR
STATION PRESSURE IS MEASURED IN INCHES OF MERCURY

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER, ASHEVILLE, NORTH CAROLINA, 28801

Kenneth D. Hadeen
DIRECTOR
NATIONAL CLIMATIC DATA CENTER

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AMP Ex. D

METEOROLOGICAL DATA FOR 1990

COLD BAY, ALASKA

LATITUDE: 55°12' N LONGITUDE: 162°43' W ELEVATION: FT. GRND 96 BARO 99 TIME ZONE: YUKON WBAN: 25624

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:													
Averages													
-Daily Maximum	35.2	31.5	37.1	41.4	45.8	51.0	53.8	56.3	52.8	44.8	39.4	40.7	44.2
-Daily Minimum	25.5	21.0	27.1	31.3	36.9	42.8	46.3	48.1	42.3	35.8	29.7	32.1	34.9
-Monthly	30.4	26.3	32.1	36.4	41.4	46.9	50.1	52.2	47.6	40.3	34.6	36.4	39.6
-Monthly Dept	27.5	24.0	28.9	32.3	37.8	43.6	47.1	49.5	44.1	36.0	30.4	33.5	36.2
Extremes													
-Highest	42	40	44	49	57	60	59	68	63	57	56	54	68
-Date	15	12	28	29	28	2	17	25	5	4	17	11	AUG 25
-Lowest	14	8	15	26	29	39	41	43	31	27	13	14	8
-Date	25	27	4	19	3	1	14	4	22	25	30	17	FEB 27
DEGREE DAYS BASE 65 °F:													
Heating	1063	1077	1010	853	727	535	455	390	516	757	905	879	9167
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
% OF POSSIBLE SUNSHINE													
AVG. SKY COVER (tenths)													
Sunrise - Sunset	8.1	9.5	8.1	8.7	9.6	9.7	9.6	9.4	8.9	9.0	8.7	9.3	9.1
Midnight - Midnight	8.2	9.5	8.2	8.8	9.4	9.8	9.6	9.4	8.8	9.1	8.8	9.1	9.1
NUMBER OF DAYS:													
Sunrise to Sunset													
-Clear	3	0	4	2	0	0	0	0	0	0	1	0	10
-Partly Cloud,	5	1	2	5	0	1	2	4	5	4	4	2	35
-Cloudy	23	27	25	23	31	29	29	27	25	27	25	29	320
Precipitation .01 inches or more	25	21	21	15	25	15	17	18	23	27	20	24	251
Snow, Ice pellets 1.0 inches or more	7	8	2	1	0	0	0	0	0	1	2	3	24
Thunderstorms	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy fog, visibility 1/4 mile or less	1	2	0	1	1	1	0	4	1	0	0	1	12
Temperature °F													
-Maximum													
70° and above	0	0	0	0	0	0	0	0	0	0	0	0	0
32° and below	7	15	6	2	1	0	0	0	0	0	4	2	37
-Minimum													
32° and below	29	25	23	23	5	0	0	0	1	9	18	16	148
0° and below	0	0	0	0	0	0	0	0	0	0	0	0	0
AVG. STATION PRESS. (mb)	991.9	1007.1	1002.4	1009.1	1003.9	1008.8	1008.8	1010.2	1000.3	1002.9	1015.6	1001.7	1005.1
RELATIVE HUMIDITY (%)													
Hour 03	88	90	89	91	94	96	96	96	92	88	86	90	91
Hour 09 (Local Time)	87	89	90	91	91	94	94	96	90	87	85	92	91
Hour 15	84	89	84	80	64	85	85	89	81	79	84	89	84
Hour 21	91	90	87	89	92	92	92	95	90	87	87	89	90
PRECIPITATION (inches):													
Water Equivalent													
-Total	3.99	2.18	1.84	1.16	3.23	1.38	2.13	2.89	6.55	4.21	2.06	5.96	37.58
-Greatest 124 hrs!	1.36	0.42	0.42	0.34	0.71	0.59	0.98	1.13	2.35	1.60	0.73	1.54	2.35
-Date	19	11-12	7- 8	6- 7	17	13	22-23	21-22	7- 8	9-10	13-14	27-28	SEP 7- 8
Snow, Ice pellets													
-Total	16.4	18.7	8.8	3.9	0.6	0.0	0.0	0.0	T	4.7	10.6	6.3	70.0
-Greatest 124 hrs!	2.2	2.9	2.5	2.1	0.6	0.0	0.0	0.0	T	2.5	4.2	1.6	4.2
-Date	12	22-23	2	6	1- 2				30	25-26	21	9	NOV 21
WIND:													
Resultant													
-Direction (!!!)	212	317	148	345	167	246	181	190	199	276	308	158	216
-Speed (mph)	4.7	2.4	2.8	4.8	9.0	3.1	5.5	5.5	3.4	9.2	9.2	9.4	2.7
Average Speed (mph)	16.7	16.1	16.3	14.6	19.7	13.8	16.4	16.2	16.4	17.2	18.7	20.5	16.9
Fastest Obs 1 Min													
-Direction (!!!)	12	18	27	14	16	17	15	26	15	15	26	12	12
-Speed (mph)	46	40	40	35	40	37	36	41	40	46	51	52	52
-Date	30	12	7	1	25	15	18	16	4	9	25	1	DEC 1
Peak Gust													
-Direction (!!!)	SE	S	W	SE	SE	S	SE	S	S	SE	W	SE	W
-Speed (mph)	58	52	55	47	52	49	45	54	54	60	71	69	71
-Date	30	12	7	1	17	15	18	26	5	9	25	1	NOV 25

!!!! See Reference Notes on Page 68

AMP Ex. D

Page 2 of 8

NORMALS, MEANS, AND EXTREMES

COLD BAY, ALASKA

LATITUDE: 55°12'N LONGITUDE: 162°43'W ELEVATION: FT. GRND 96 BARO 99 TIME ZONE: YUKON WBAN: 25624

	Yrs	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F:														
Normals														
-Daily Maximum		32.8	32.2	33.6	37.7	44.3	50.0	54.9	55.4	52.0	44.2	38.8	33.9	42.5
-Daily Minimum		23.8	22.7	23.6	28.3	34.7	40.8	45.6	46.9	43.0	34.7	29.8	25.8	33.2
-Monthly		28.3	27.5	28.6	33.0	39.5	45.4	50.3	51.2	47.5	39.5	34.3	29.5	37.9
Extremes														
-Record Highest	46	50	50	56	60	67	69	77	78	76	69	59	54	78
-Year		1973	1957	1974	1948	1979	1953	1960	1948	1985	1964	1986	1990	AUG 1948
-Record Lowest	47	-8	-9	-13	4	18	29	33	33	27	10	1	-1	-13
-Year		1989	1947	1971	1976	1973	1952	1982	1946	1970	1976	1963	1979	MAR 1971
NORMAL DEGREE DAYS:														
Heating (base 65°F)		1138	1050	1128	960	791	508	456	428	525	791	921	1101	9877
Cooling (base 65°F)		0	0	0	0	0	0	0	0	0	0	0	0	
% OF POSSIBLE SUNSHINE														
MEAN SKY COVER (tenths)														
Sunrise - Sunset	35	8.2	8.3	8.3	9.0	9.2	9.2	9.4	9.5	9.1	8.7	8.5	8.5	8.8
MEAN NUMBER OF DAYS:														
Sunrise to Sunset														
-Clear	35	2.6	2.0	1.9	0.7	0.3	0.5	0.2	0.2	0.2	0.7	1.0	1.8	12.1
-Partly Cloudy	35	5.6	4.6	6.1	3.8	2.8	2.6	2.3	1.9	3.5	5.2	5.4	5.2	49.0
-Cloudy	35	22.8	21.7	23.1	25.5	27.8	26.9	28.4	28.9	26.3	25.1	23.6	24.1	304.2
Precipitation:														
.01 inches or more	45	19.0	17.1	17.8	16.2	17.1	15.6	16.4	19.6	20.4	22.8	21.6	20.4	224.0
Snow, Ice pellets														
1.0 inches or more	40	3.8	3.8	3.5	2.0	0.5	0.0	0.0	0.0	0.0	1.0	2.5	3.5	20.6
Thunderstorms	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.2
Heavy Fog Visibility														
1/4 mile or less	35	1.9	1.5	2.0	1.4	1.5	2.1	4.0	3.6	1.1	0.3	0.6	1.7	21.7
Temperature °F														
-Maximum														
70° and above	46	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.4
32° and below	46	11.3	11.1	10.2	5.9	0.5	0.0	0.0	0.0	0.0	0.5	3.7	9.8	53.0
-Minimum														
32° and below	47	24.4	23.7	25.3	21.5	8.5	0.4	0.0	0.0	0.4	8.6	18.8	24.0	155.6
0° and below	47	0.6	0.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.7
AVG. STATION PRESS (mb)	18	998.8	998.8	999.2	1004.7	1004.3	1008.0	1011.1	1009.3	1004.3	1000.5	998.4	995.9	1002.4
RELATIVE HUMIDITY (%)														
Hour 03	21	85	84	84	85	88	90	92	92	89	84	83	84	87
Hour 09	21	85	84	84	84	84	86	90	90	88	83	83	84	85
Hour 15 (Local Time)	21	82	80	78	77	76	77	82	82	80	77	80	83	80
Hour 21	21	84	83	84	83	83	84	88	90	87	83	83	84	85
PRECIPITATION (inches):														
Water Equivalent														
-Normal		2.70	2.27	2.31	1.95	2.47	2.16	2.50	3.70	3.77	4.29	4.04	2.85	35.01
-Maximum Monthly	45	8.46	7.87	4.70	6.55	6.37	6.98	6.13	9.97	9.79	8.02	8.94	7.31	9.97
-Year		1948	1944	1977	1979	1958	1952	1982	1951	1965	1968	1960	1983	AUG 1951
-Minimum Monthly	45	0.60	0.08	0.41	0.02	0.62	0.12	0.28	1.10	0.91	1.88	1.15	0.19	0.02
-Year		1956	1950	1972	1948	1967	1962	1950	1975	1952	1961	1975	1956	APR 1948
-Maximum in 24 hrs	45	2.49	2.49	2.06	1.76	2.22	2.10	1.77	2.17	3.43	4.90	3.43	2.44	4.90
-Year		1948	1956	1976	1951	1958	1971	1986	1951	1965	1968	1972	1978	OCT 1968
Snow, Ice pellets														
-Maximum Monthly	40	34.6	54.3	28.6	19.5	9.3	0.5	1	0.0	0.2	15.6	27.4	24.2	54.3
-Year		1982	1984	1985	1976	1971	1971	1976		1972	1968	1983	1976	FEB 1984
-Maximum in 24 hrs	40	18.0	17.7	7.4	6.0	4.0	2.6	1	0.0	0.2	11.4	21.4	9.4	21.4
-Year		1982	1984	1987	1956	1986	1971	1976		1972	1968	1983	1975	NOV 1983
WIND:														
Mean Speed (mph)	35	17.7	17.9	17.3	17.9	16.3	15.9	15.7	16.4	16.4	16.8	17.6	17.5	16.9
Prevailing Direction through 1963		SSE	SSE	NNW	SSE	SSE	NNW	SSE	SSE	SSE	WSW	SSE	NNW	SSE
Fastest Obs. 1 Min.														
-Direction (!!!)	35	17	16	17	15	14	11	17	16	17	21	14	11	17
-Speed (MPH)	35	71	73	67	60	60	63	54	64	75	60	66	64	75
-Year		1985	1967	1977	1987	1985	1959	1972	1985	1988	1978	1967	1960	SEP 1988
Peak Gust														
-Direction (!!!)	6	SE	SE	E	SE	SE	S	SE	SE	S	SW	SE	SW	S
-Speed (mph)	6	85	83	76	77	71	64	56	81	95	63	75	78	95
-Date		1987	1989	1987	1987	1985	1987	1987	1985	1988	1985	1986	1988	SEP 1988

!!!! See Reference Notes on Page 68.

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PRECIPITATION (inches)

COLD BAY, ALASKA

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
#1961	1.93	1.62	1.72	1.78	0.95	0.12	1.08	3.50	1.93	1.88	4.11	2.79	23.41
1962	2.53	1.53	2.10	0.76	2.37	0.12	3.41	1.98	3.84	4.16	2.57	1.02	26.39
1963	4.91	0.43	3.02	1.66	1.32	1.06	4.28	2.69	3.61	3.03	1.46	2.01	29.48
1964	1.33	1.75	1.32	0.21	1.15	1.85	1.74	3.56	5.25	3.33	3.71	1.31	26.51
1965	1.21	2.78	3.05	0.83	2.66	2.54	1.20	1.57	7.79	2.75	2.55	1.77	32.70
1966	2.21	1.59	1.40	1.31	2.49	0.79	4.63	3.73	4.28	2.96	2.80	2.09	30.28
1967	1.60	2.58	2.54	3.06	0.62	2.48	2.89	4.72	2.91	2.71	7.40	4.49	38.00
1968	2.77	1.29	1.21	1.37	1.30	0.84	0.99	3.53	2.55	8.02	3.32	1.17	28.36
1969	3.75	2.33	1.92	1.09	3.44	2.52	2.01	5.02	5.18	3.90	2.97	2.33	36.46
1970	2.11	4.15	3.32	3.83	2.06	2.99	3.86	3.82	5.62	5.82	2.89	5.94	46.41
1971	1.34	2.17	0.59	0.43	3.75	6.67	2.27	2.76	3.86	3.28	5.11	4.87	37.10
1972	4.08	1.09	0.41	3.09	2.06	2.91	1.82	3.84	1.38	3.91	6.96	6.49	37.96
1973	1.97	1.60	1.87	1.30	1.05	0.78	1.31	2.16	3.07	4.80	2.45	2.67	25.04
1974	2.96	2.72	0.72	1.69	3.12	0.92	1.93	2.63	2.55	2.15	3.78	1.73	26.90
1975	3.12	4.93	2.85	2.53	0.88	3.03	2.55	1.10	4.23	3.18	1.15	5.03	34.58
1976	1.88	2.88	3.76	2.09	0.94	2.69	1.92	2.01	2.38	5.63	2.51	2.89	31.58
1977	4.82	2.36	4.70	2.38	1.71	1.14	2.89	3.32	2.63	5.12	6.85	3.55	41.47
1978	3.70	1.74	2.22	5.42	3.63	2.84	5.67	2.88	3.82	7.67	6.67	6.89	53.15
1979	4.10	0.78	4.65	6.55	4.92	1.98	2.02	5.33	5.31	7.14	7.57	2.21	52.56
1980	3.51	1.69	3.52	1.71	4.22	3.67	2.68	3.95	5.23	4.42	2.88	2.24	39.72
1981	2.34	4.45	2.34	1.30	3.09	1.75	2.64	5.73	2.25	6.51	3.11	3.16	38.67
1982	5.41	1.13	3.45	1.33	4.13	2.93	6.13	2.17	6.44	2.41	5.12	3.10	43.75
1983	1.58	0.66	0.88	3.53	1.59	1.31	2.21	4.06	4.41	4.82	5.69	7.31	38.55
1984	2.30	2.82	1.56	1.79	1.20	1.45	1.77	1.48	2.87	3.64	7.61	3.19	31.68
1985	3.29	2.42	2.85	1.01	2.45	2.19	2.27	5.47	7.14	6.59	7.72	4.95	48.35
1986	2.05	2.23	0.55	1.12	2.02	1.91	2.48	2.63	7.37	3.03	5.08	4.94	35.41
1987	3.17	3.15	3.18	1.94	1.52	4.00	1.80	2.56	4.25	5.60	3.17	3.69	38.03
1988	3.70	2.91	0.89	1.81	2.70	1.69	1.12	3.03	3.90	3.28	3.97	6.37	35.37
1989	1.68	4.02	0.52	2.20	2.21	2.48	1.40	3.20	7.77	4.39	2.60	3.81	36.28
1990	3.99	2.18	1.84	1.16	3.23	1.38	2.13	2.89	6.55	4.21	2.06	5.96	37.58
Record Mean	2.76	2.56	2.04	1.84	2.28	2.16	2.35	3.59	4.11	4.48	4.34	3.37	35.89

See Reference Notes on Page 68.
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AVERAGE TEMPERATURE (deg. F)

COLD BAY, ALASKA

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
#1961	31.0	23.3	25.1	33.1	41.4	45.2	49.6	50.5	48.0	38.8	35.5	26.3	37.3
1962	22.7	33.2	31.2	31.9	38.2	44.6	51.4	52.1	46.8	39.6	35.8	29.3	38.1
1963	34.1	29.1	34.4	32.9	40.8	45.9	50.6	50.6	48.5	38.1	28.4	31.8	38.8
1964	30.0	26.2	29.3	32.7	38.1	46.4	47.8	48.6	47.1	39.7	32.9	30.3	37.4
1965	27.3	24.7	35.6	35.2	36.3	44.4	48.7	50.3	48.9	36.7	36.0	28.5	37.7
1966	32.8	31.7	21.4	34.4	37.4	44.2	48.6	49.1	44.6	33.9	32.3	27.7	36.5
1967	25.5	28.5	34.5	38.2	41.5	46.8	52.9	51.3	46.3	38.2	38.0	30.4	39.5
1968	29.3	24.0	30.4	34.2	42.7	45.4	52.9	52.0	46.8	38.9	36.0	30.9	38.6
1969	31.8	28.0	32.5	34.5	41.7	46.9	53.2	53.4	50.2	42.9	33.5	31.3	40.0
1970	22.4	28.1	31.8	31.8	40.8	47.8	51.3	50.2	46.9	40.0	37.6	30.5	38.3
1971	22.1	26.0	20.2	28.0	34.3	40.5	47.8	48.5	44.5	38.7	32.4	32.4	34.6
1972	27.2	21.4	16.3	29.5	38.6	41.6	48.6	50.0	47.9	39.8	34.3	30.4	35.5
1973	22.9	30.6	29.0	31.5	36.0	42.5	47.5	50.0	46.4	38.5	37.5	30.1	36.9
1974	29.7	19.0	28.9	32.2	41.4	45.8	49.9	53.2	49.2	40.4	34.2	27.5	37.6
1975	24.4	23.7	26.8	32.0	38.4	46.2	50.5	52.5	46.4	39.3	30.1	27.9	36.5
1976	25.5	23.9	22.0	27.2	36.6	44.6	49.7	50.8	45.3	39.1	30.5	28.2	35.3
1977	35.3	33.5	30.7	31.3	39.3	49.6	54.0	53.6	50.1	38.9	31.2	29.4	39.8
1978	33.4	28.4	30.8	37.9	40.5	47.0	49.6	54.3	48.8	40.1	38.1	35.2	40.3
1979	35.1	28.4	35.4	40.8	43.4	50.6	52.3	51.9	49.0	41.9	35.0	26.7	40.9
1980	23.5	25.4	33.7	35.6	41.4	45.9	52.9	51.5	48.1	40.3	36.4	32.1	38.9
1981	30.9	29.4	35.9	38.4	44.8	47.6	52.9	52.2	48.1	40.8	33.8	30.7	40.5
1982	29.8	27.1	33.9	32.1	38.0	45.0	46.8	50.2	45.1	37.5	35.3	30.5	37.6
1983	24.6	31.5	33.5	36.8	41.7	48.4	51.6	52.2	47.3	39.7	34.6	37.5	40.0
1984	31.2	18.7	33.7	31.6	38.0	47.0	49.7	54.7	49.7	40.8	37.0	37.3	39.1
1985	36.1	27.9	30.1	26.8	38.3	42.5	50.6	50.8	49.5	39.6	38.9	35.6	38.9
1986	24.4	28.4	27.0	32.2	38.0	44.7	51.7	51.2	49.8	42.2	37.0	34.4	38.4
1987	30.5	31.2	33.6	34.2	38.8	44.5	50.9	52.8	46.9	41.0	30.0	28.3	38.6
1988	31.2	30.2	26.1	31.1	40.3	46.0	51.0	51.1	46.9	40.5	32.5	30.9	38.2
1989	22.3	35.0	31.5	34.3	40.6	46.0	50.9	53.3	49.8	42.3	32.1	31.3	39.1
1990	30.4	26.3	32.1	36.4	41.4	46.9	50.1	52.2	47.6	40.3	34.6	36.4	39.6
Record Mean	26.4	27.9	29.3	33.0	39.5	45.4	50.1	51.4	47.4	39.8	34.3	30.3	38.0
Max	32.9	32.5	34.1	37.6	44.3	50.0	54.5	55.6	51.8	44.4	38.7	34.6	42.6
Min	23.9	23.2	24.4	28.3	34.7	40.8	45.7	47.2	42.9	35.1	29.9	25.9	33.5

See Reference Notes on Page 68.
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HEATING DEGREE DAYS Base 65 deg. F — COLD BAY, ALASKA

SEASON	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
1961-62	470	442	501	806	877	1192	1301	882	1042	987	821	606	9930
1962-63	418	392	536	780	868	1103	949	997	940	955	745	565	9248
1963-64	439	436	488	823	1090	1022	1081	1118	1101	961	830	550	9939
1964-65	522	501	529	778	957	1068	1162	1121	907	886	884	608	9923
1965-66	497	450	477	871	864	1126	991	924	1346	914	850	616	9926
1966-67	500	486	607	956	977	1153	1185	1017	936	798	717	540	9872
1967-68	369	417	555	820	804	1064	1133	1183	1067	917	682	577	9591
1968-69	368	394	538	804	865	1053	1225	1028	999	907	714	537	9232
1969-70	361	353	436	680	939	1039	1311	1025	1024	987	745	512	9412
1970-71	416	452	538	766	815	1059	1323	1086	1381	1103	945	728	10612
1971-72	527	504	608	809	973	1004	1165	1260	1503	1056	814	697	10920
1972-73	500	457	505	774	915	1065	1295	960	1105	998	895	668	10137
1973-74	537	459	549	815	817	1076	1089	1281	1113	977	725	569	10007
1974-75	460	360	466	756	917	1157	1252	1149	1176	984	816	557	10050
1975-76	443	380	553	790	1038	1145	1217	1184	1324	1125	877	603	10679
1976-77	463	434	585	797	1029	1134	914	874	1057	1006	789	456	9538
1977-78	334	344	441	805	1006	1095	972	1017	1053	808	750	535	9160
1978-79	471	325	481	766	799	917	921	1020	910	720	661	425	8416
1979-80	387	400	474	712	893	1179	1279	1143	964	876	726	569	9602
1980-81	368	414	499	757	851	1014	1051	990	898	791	621	512	8766
1981-82	368	390	500	742	929	1058	1083	1056	956	980	828	592	9482
1982-83	559	451	590	848	884	1062	1246	934	969	838	718	493	9592
1983-84	408	388	523	779	907	847	1045	1338	967	995	834	533	9564
1984-85	467	310	452	744	834	854	889	1033	1075	1140	821	669	9288
1985-86	440	434	455	779	775	905	1251	1018	1173	976	832	605	9643
1986-87	406	423	448	699	834	939	1063	943	965	916	806	607	9049
1987-88	431	373	538	737	1042	1131	1043	1003	1203	1014	754	565	9834
1988-89	427	423	537	755	970	1050	1318	834	1034	917	751	564	9580
1989-90	432	353	447	695	978	1037	1063	1077	1010	853	727	535	9207
1990-91	455	390	516	757	905	879							

See Reference Notes on Page 6B.
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COOLING DEGREE DAYS Base 65 deg. F — COLD BAY, ALASKA

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
1969	C	0	0	0	0	C	0	0	0	0	0	0	0
1970	C	0	0	0	0	0	0	1	0	0	0	0	1
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	C	0	0	0	0	0	0	0	0	0	0	0	0
1974	C	0	0	0	0	0	0	0	0	0	0	0	0
1975	C	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	C	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	C	0	0	0	0	0	0	0	0	0	0	0	0
1982	C	0	0	0	0	0	0	0	0	0	0	0	0
1983	C	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0

See Reference Notes on Page 6B.
Page 5B

AMP Ex. D

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SNOWFALL (inches)

COLD BAY, ALASKA

SEASON	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL
1961-62	0.0	0.0	T	0.7	3.5	4.9	3.1	3.6	4.6	2.9	0.1	0.1	23.5
1962-63	0.0	0.0	0.0	4.3	2.1	6.7	0.9	1.6	2.8	3.8	0.9	0.0	23.1
1963-64	0.0	0.0	0.0	4.2	4.6	0.5	6.1	8.3	7.3	1.1	1.2	0.0	33.3
1964-65	0.0	0.0	0.0	3.4	16.2	9.1	16.4	23.4	1.6	3.2	5.3	0.0	78.6
1965-66	0.0	0.0	0.1	7.7	9.7	9.7	9.3	8.8	14.0	1.4	0.7	0.0	61.4
1966-67	0.0	0.0	0.0	10.7	6.0	12.8	11.4	15.4	4.5	1.0	0.0	0.0	61.8
1967-68	0.0	0.0	T	4.5	4.8	12.2	6.8	10.3	7.8	5.1	2.1	0.0	53.6
1968-69	0.0	0.0	T	15.6	6.7	7.8	10.1	21.0	13.4	6.2	4.8	0.0	85.6
1969-70	0.0	0.0	0.0	2.2	4.5	7.2	9.4	8.6	10.6	6.8	6.8	0.0	56.1
1970-71	0.0	0.0	0.0	1.0	3.3	8.8	19.9	10.5	3.9	6.1	9.3	0.5	63.3
1971-72	0.0	0.0	0.0	T	2.1	9.3	15.6	9.8	4.2	9.9	1.4	T	52.3
1972-73	0.0	0.0	0.2	T	4.0	14.6	10.6	11.5	9.8	10.1	3.5	T	64.3
1973-74	0.0	0.0	T	3.9	2.4	13.0	6.5	17.1	5.9	4.5	1.8	0.0	55.1
1974-75	0.0	0.0	0.0	0.4	10.8	11.7	6.2	13.5	20.5	8.6	2.5	0.0	74.2
1975-76	0.0	0.0	0.0	3.7	12.3	20.4	16.2	16.9	13.9	19.5	0.8	0.0	103.7
1976-77	T	0.0	0.0	6.9	10.4	24.2	4.8	7.5	27.0	7.1	3.6	0.0	91.5
1977-78	0.0	0.0	0.0	9.4	15.0	4.8	14.4	13.9	16.4	3.5	0.1	0.0	77.5
1978-79	0.0	0.0	T	6.4	2.7	9.7	12.4	4.4	11.5	2.1	0.3	0.0	49.5
1979-80	0.0	0.0	T	0.3	15.2	10.5	14.1	11.1	23.7	13.6	1.1	0.0	89.6
1980-81	0.0	0.0	T	2.2	7.6	9.6	10.4	12.0	11.8	2.1	1.4	0.0	57.1
1981-82	0.0	0.0	T	5.5	13.2	14.0	34.6	5.8	15.7	5.6	1.0	0.0	95.4
1982-83	0.0	0.0	T	0.4	3.0	17.6	14.2	10.7	9.1	5.7	-	0.0	61.0
1983-84	0.0	0.0	T	4.0	27.4	2.6	14.3	54.3	4.3	7.6	1.4	0.0	115.9
1984-85	0.0	0.0	0.0	5.3	10.6	6.9	4.2	8.2	28.6	8.8	1.5	0.4	74.5
1985-86	0.0	0.0	T	2.8	1.1	12.1	24.2	11.3	6.1	5.3	6.2	0.0	69.1
1986-87	0.0	0.0	0.0	T	7.6	7.2	12.4	10.5	20.3	7.6	1.0	T	66.6
1987-88	0.0	0.0	0.1	0.7	8.1	14.3	11.0	5.9	7.5	11.6	0.1	0.0	59.3
1988-89	0.0	0.0	0.0	0.3	15.2	22.1	11.2	13.7	3.1	10.4	0.3	0.0	76.3
1989-90	0.0	0.0	0.0	0.1	14.0	6.9	16.4	18.7	8.8	3.9	0.5	0.0	69.4
1990-91	0.0	0.0	T	4.7	10.6	6.3							
Record Mean	T	0.0	T	3.0	7.8	10.0	10.8	11.6	10.6	6.2	1.8	T	61.9

See Reference Notes on Page 6B.

REFERENCE NOTES

COLD BAY, ALASKA

GENERAL
T - TRACE AMOUNT
BLANK ENTRIES DENOTE MISSING/UNREPORTED DATA.
# INDICATES A STATION OR INSTRUMENT RELOCATION.
SEE STATION LOCATION TABLE ON PAGE 8.

SPECIFIC
PAGE 2
PM - INCLUDES LAST DAY OF PREVIOUS MONTH

PAGE 3
( ) - LENGTH OF RECORD IN YEARS, ALTHOUGH INDIVIDUAL MONTHS MAY BE MISSING.
0.0 OR 0 - THE VALUE IS BETWEEN 0.0 AND 0.05
NORMALS - BASED ON THE 1951-1980 RECORD PERIOD.
EXTREMES - DATES ARE THE MOST RECENT OCCURRENCE
WIND DIR. - NUMERALS SHOW TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. '00' INDICATES CALM.
RESULTANT DIRECTIONS ARE GIVEN TO WHOLE DEGREES.

PAGE 4B
MAX AND MIN ARE LONG TERM MEAN DAILY MAXIMUM AND MEAN DAILY MINIMUM TEMPERATURES.

EXCEPTIONS

PAGES 4A, 4B, 6A
RECORD MEANS ARE THROUGH THE CURRENT YEAR, BEGINNING IN 1943 FOR TEMPERATURE
1943 FOR PRECIPITATION
1951 FOR SNOWFALL

AMP Ex. D

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COLD BAY, ALASKA

The station at Cold Bay is located approximately 30 miles from the end of the Alaskan Peninsula on the northwest side of Cold Bay. Ten miles south-southwest of the station, Frosty Peak rises to an elevation of 6,700 feet. Across the bay to the east several mountains rise to elevations in excess of 5,000 feet. The mountains to the east and southwest provide a sheltering effect from winds and precipitation approaching from these directions. Winds reaching the station from southwesterly or easterly directions rarely exceed 25 mph. The open bay area to the south-southeastward tends to provide a funneling effect upon all winds approaching the Cold Bay area from the southwest to the southeast. From west to the northeast the land is relatively flat with numerous lakes and swamps. Winds from northerly directions are influenced very little by this flat terrain.

The high frequency of cyclonic storms crossing the Northern Pacific and the Bering Sea are the dominant factors in the weather at Cold Bay. These storms account for the high winds and the frequent occurrences of low ceilings and low visibilities encountered at this station. The winds generally result from the strong pressure gradient developing between the Pacific High and the cyclonic storms in the Northern Pacific and Bering Sea.

The climate at Cold Bay is basically maritime, due to the nearness to extensive open ocean areas, and temperature extremes, both seasonal and diurnal, are generally confined to fairly narrow limits. Differences between maximum and minimum temperatures for all individual months average less than 10 degrees. Although it is practically impossible for cold, continental air masses to reach the Cold Bay area by moving overland along the somewhat narrow Alaskan Peninsula, air overlying the frozen ocean surface of the Bering Sea may take on continental characteristics and bring rather cold temperatures to the area. Although below-zero readings have been recorded from December to March, inclusive, below-zero readings are infrequent.

Due to the moderating effects of nearby ocean areas, it is difficult to define the seasonal periods at Cold Bay. The beginning of spring is late. The vegetation does not begin to grow until late May or early June. August is regarded as the midsummer period and autumn arrives in early October. The greatest frequency of fog usually comes in the summer season, with the foggy period extending from mid-July to mid-September. During the winter months visibilities are frequently restricted due to blowing snow. Precipitation is frequent but not abundant. The shortest day of the year at Cold Bay has 7 hours and 7 minutes of possible sunshine, the longest day has 17 hours and 27 minutes of possible sunshine.

STATION LOCATION

COLD BAY, ALASKA

LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE SEA LEVEL GROUND TEMPERATURE SITE	ELEVATION ABOVE GROUND WIND INSTRUMENTS	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE SWITCH	TIPPING BUCKET RAIN GAGE	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROTHERMOGRAPH	AUTOMATIC OBSERVING EQUIPMENT *	REMARKS
Fort Randall	2/17/42	4/1/48	NA	55° 12'	162°43'	98										Change of name
Thorrborough Air Force Base	4/1/48	10/30/53	No Change	55° 12'	162°43'	98										
1:2 Headquarters Bldg. Air Force Base	10/30/53	6/30/54	0.25 mi.NE	55° 12'	162°43'	85										
Northwest Airlines Radio Building	7/1/54	8/4/55	0.25 mi.SW	55° 12'	162°43'	98	20	5	5				3			
Cold Bay Airport	8/4/55	4/21/61	0.25 mi. N	55° 12'	162°43'	90	28 a 88	6	6				4			WB station established. a - Anemometer raised, wind vane at 35' effective 3/6/56.
IFSS Building #400 Cold Bay Airport	4/21/61	Present	2000 ft. SSE	55° 12'	162°43'	94 b 84 196	85 c 21	6 86 g	6 86 h Unk	NA	NA	4 d 75	4 e 84 14	NA e 84 14	NA	b - Instrument shelter moved 106' N to lower ground 9/1/62. c - Moved to runway intersection 11/13/62. d - Minor relocation 11/18/62. e - Commissioned 515' SW of thermometer site 8/9/83. f - Effective 8/9/63. g - Removed 8/8/77. h - Effective 8/8/77. i - Moved 231' S 5/10/83. j - Type change 10/2/85.

* Type
M = AMOS
I = AUTOB
S = ASOS
W = AWOS

SUBSCRIPTION:
Price and ordering information available through: National Climatic Data Center, Federal Building, Asheville, North Carolina 28801

USCOMM-NOAA-ASHEVILLE, N.C. - 335

U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC DATA CENTER
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ASHEVILLE, N.C. 28801-2696

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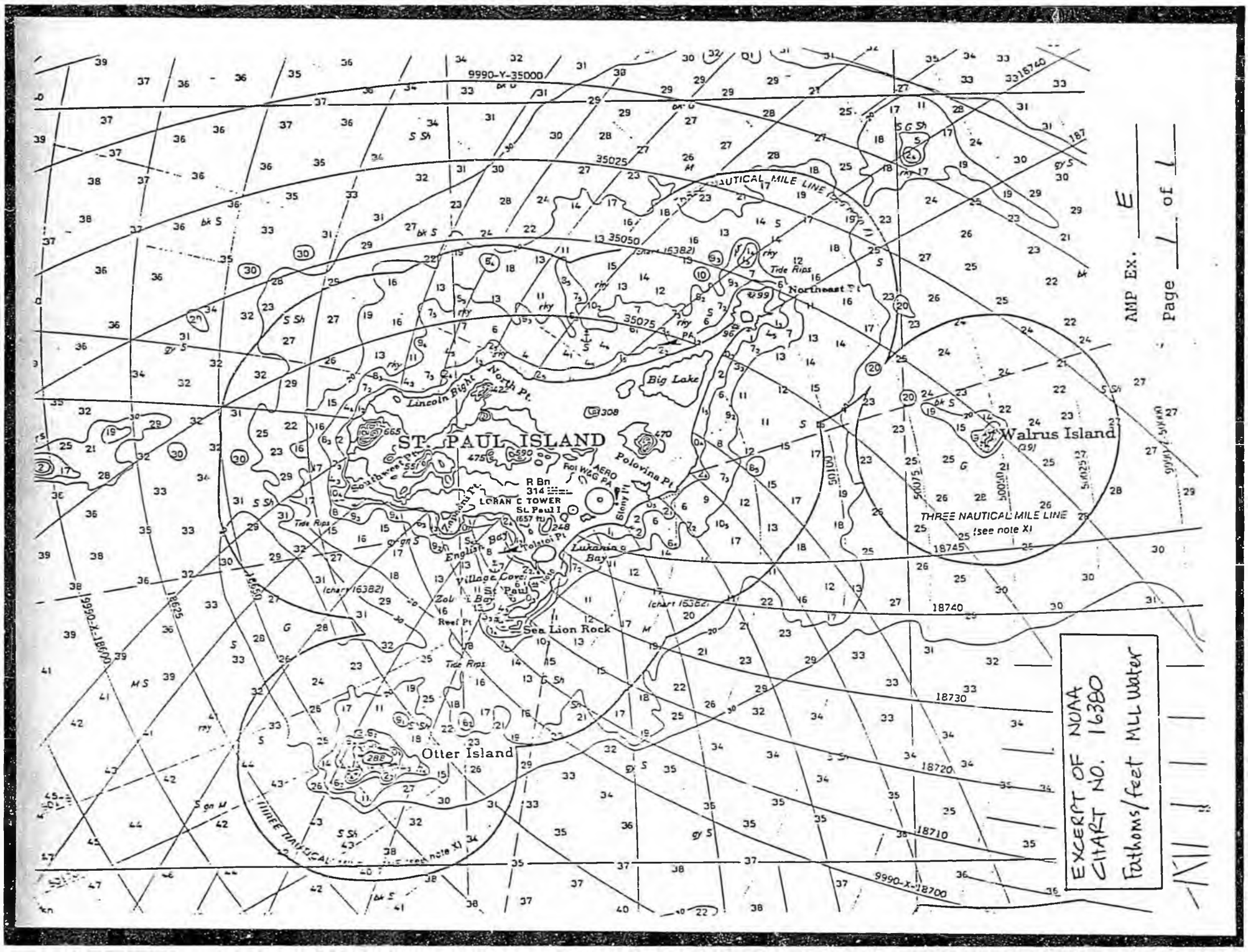
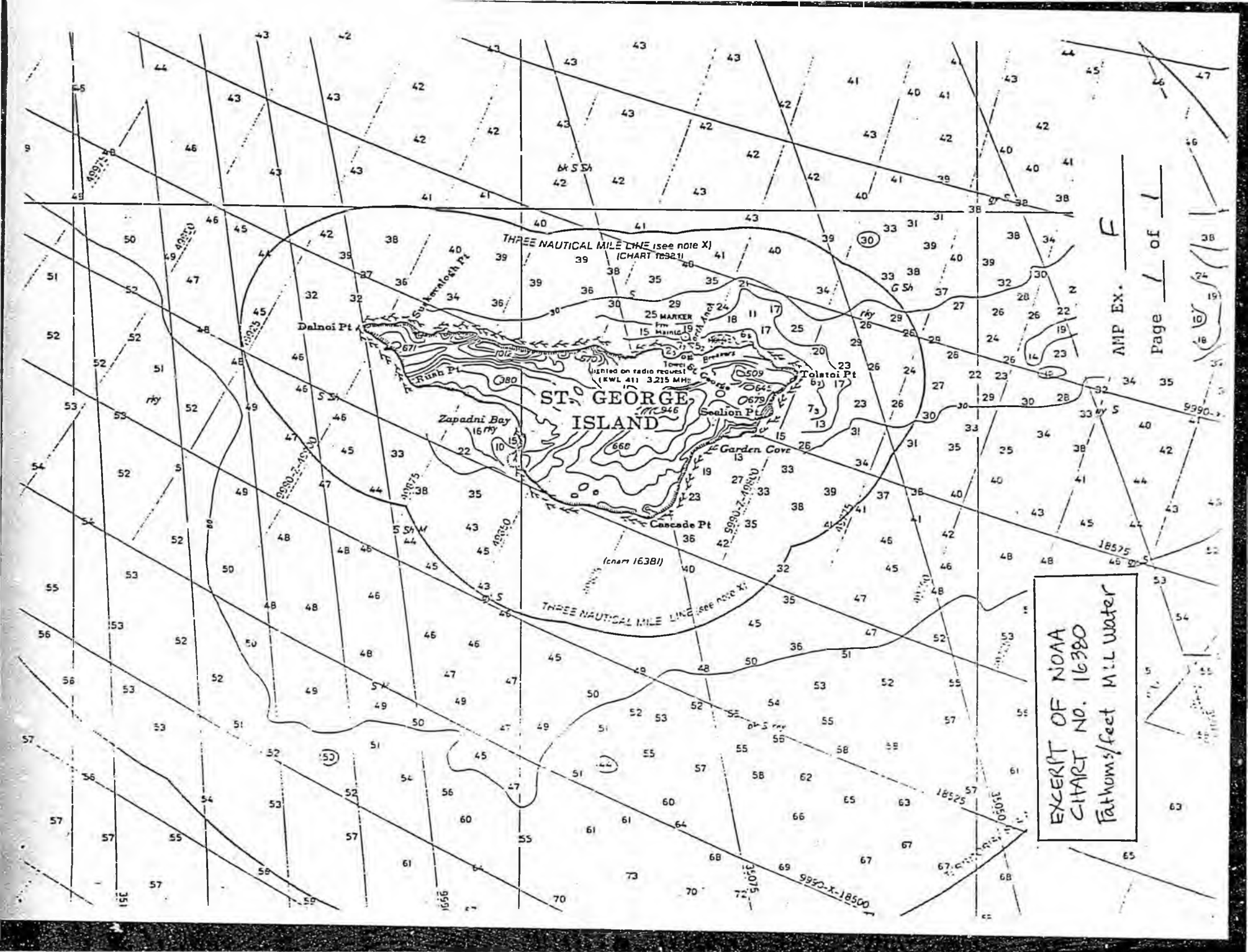
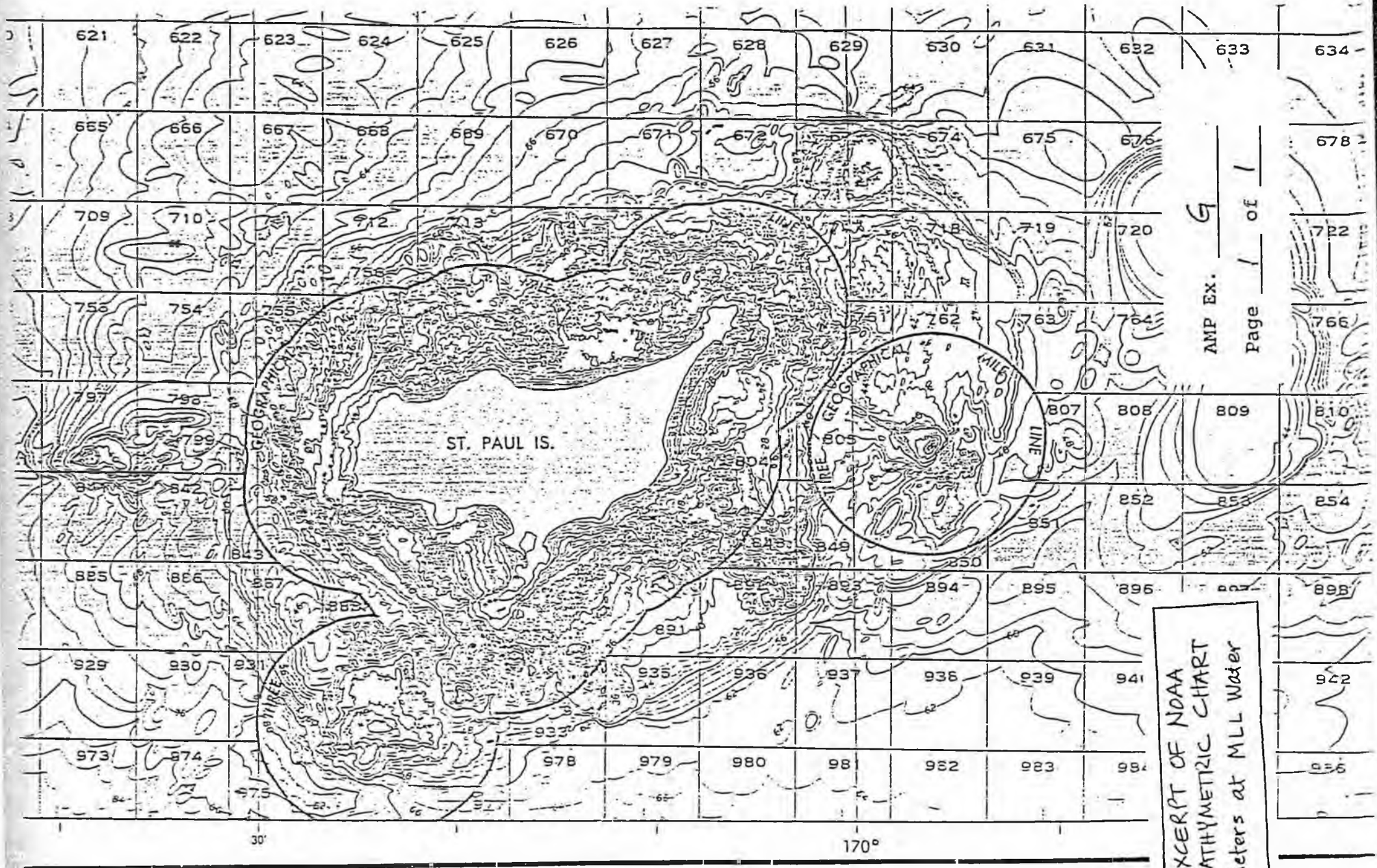
AMP Ex. D

Page 8 of 8


ST. PAUL ISLAND
Walrus Island
Otter Island
Big Lake
Lincoln Right
North Pt.
Southwest Pt.
Polovina Pt.
Tolstoi Pt.
English Bay
Village Cove
St. Paul
Zoltoi Bay
Reef Pt.
Sea Lion Rock
Lukania Bay
Northeast Pt.
Tide Rips
R Bn
314
LORAN C TOWER
St. Paul
(657 ft)
AERO
Fl(2) W&G 20 sec
THREE NAUTICAL MILE LINE
(see note XI)
9990-Y-35000
35025
35050
35075
9990-X-18700
18625
18740
18745
18730
18720
18710
(chart 16382)
EXCERPT OF NOAA CHART NO. 16380
Fathoms/feet MLL Water
AMP Ex. E
Page 1 of 1


ST. GEORGE ISLAND
THREE NAUTICAL MILE LINE (see note X)
(CHART 16321)
THREE NAUTICAL MILE LINE (see note X)
(chart 16381)
Dalnoi Pt
Rush Pt
Zapadni Bay
Cascade Pt
Garden Cove
Tolstoi Pt
Sealion Pt
Lord Anch
MARKER
Lighted on radio request
(KWL 411) 3.215 MHz
EXCERPT OF NOAA CHART NO. 16380
Fathoms/feet M.L.L. Water
AMP Ex. F
Page 1 of 1



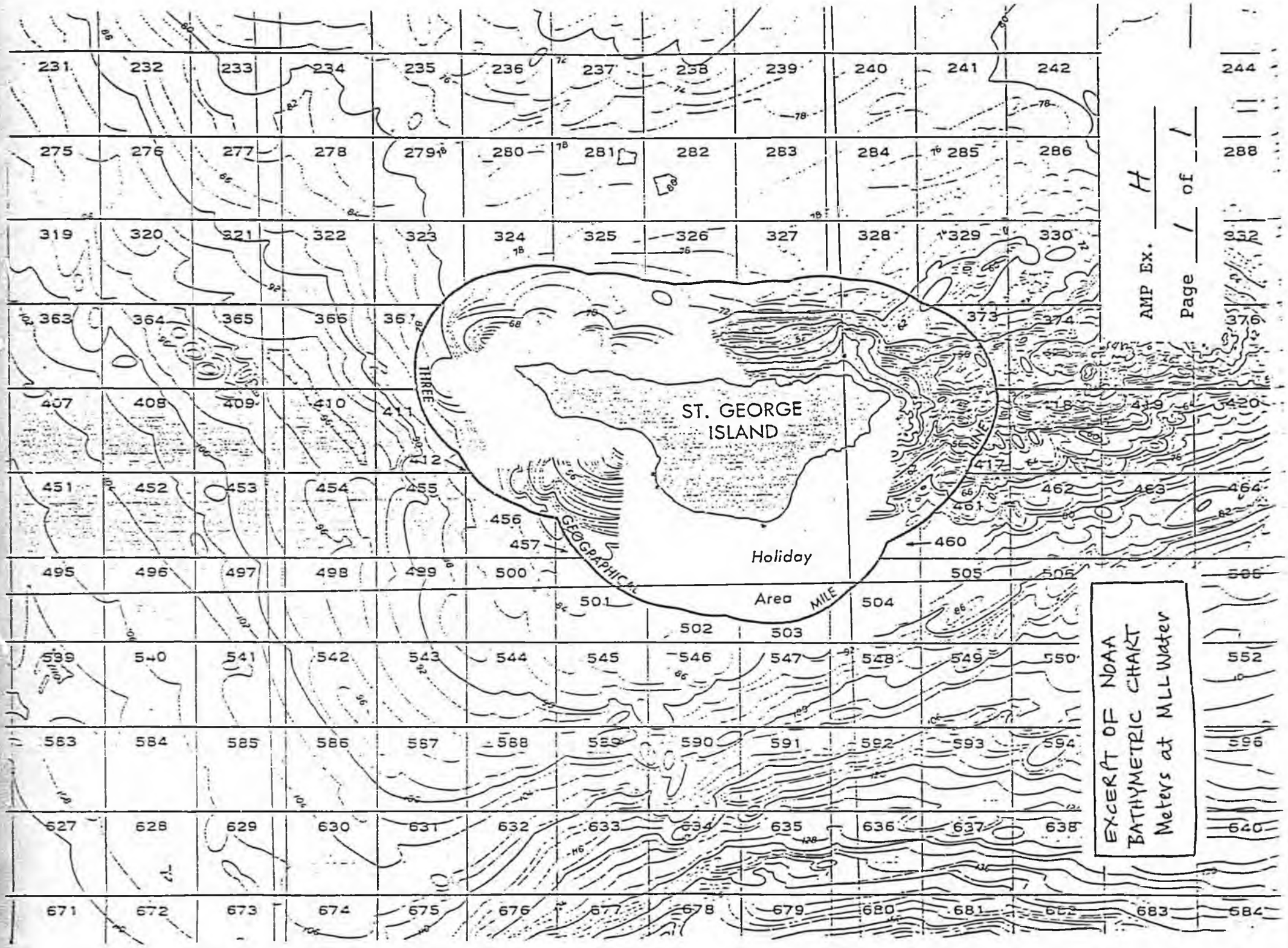
by the National Ocean Service
surveys supplemented by hydro-
ographic survey data complies
ation 44 accuracy standards or
s not intended for navigational

NATIONAL OCEAN SERVICE
HYDROGRAPHIC SURVEY INFORMATION

SURVEY NUMBER	SURVEY DATE	SURVEY SCALE	SURVEY LINE SPACING (NAUT. MILES)
H-7916	1951	1:100,000	.20-.70
H-7448	1951-53	1:40,000	.05-.55
H-7460	1951	1:40,000	.05-.70

Pu

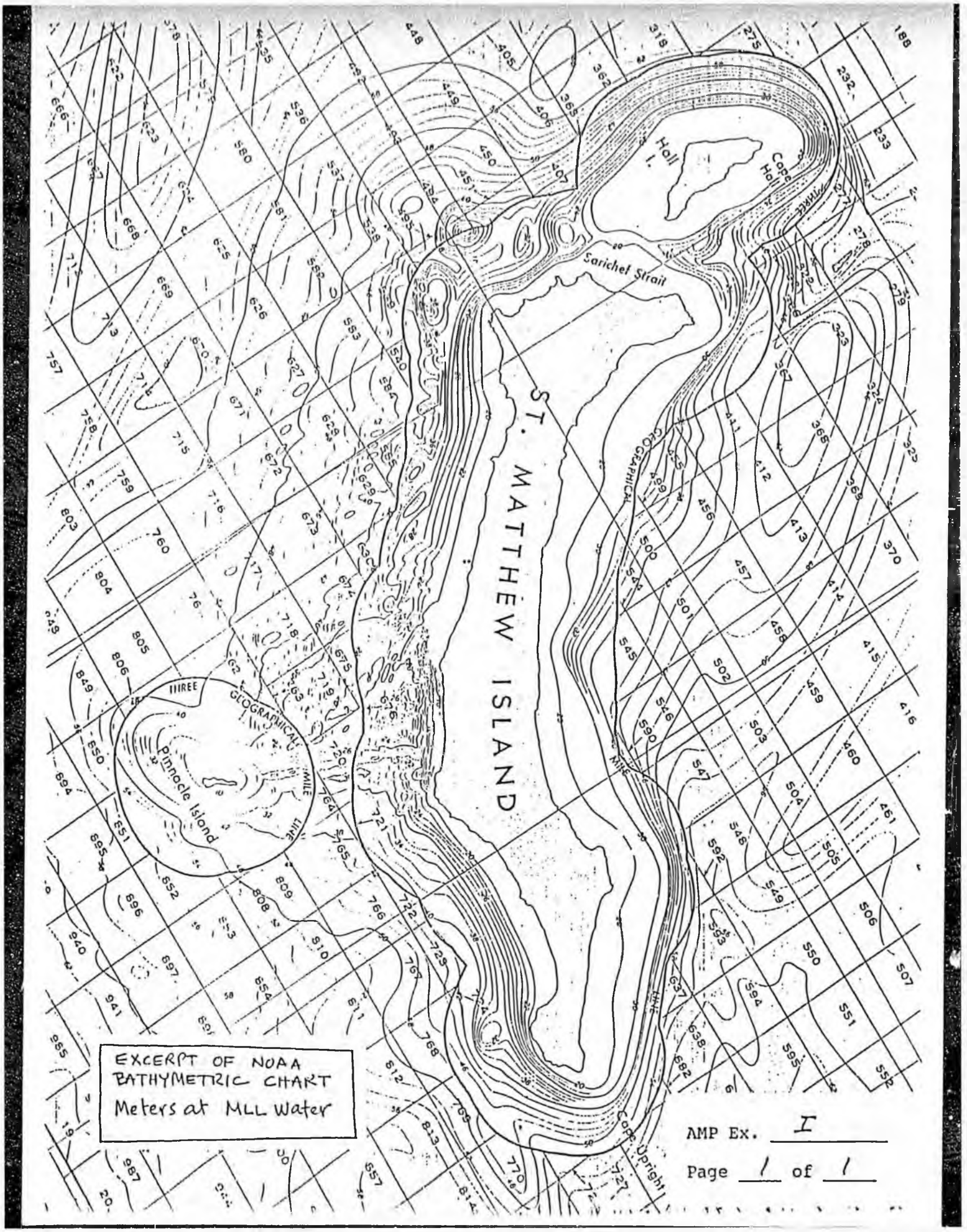
U.S. DE



AMP Ex. H

Page 1 of 1

EXCERPT OF NOAA BATHYMETRIC CHART
Meters at MLL Water



AMP Ex. I

Page 1 of 1

STATEMENT OF CAPT. WILL ANDERSON

In the three years prior to joining AMP, I sailed as master of factory trawlers and processors in the Bering Sea, including the winter season of 1990 aboard a 328-foot crab processor in the Pribilof Islands. I am familiar with the conditions and problems vessels face in these waters and have observed the general practices of the foreign tramper fleet around the islands.

I would describe the winter conditions around the Pribilof Islands as severe. Successive low pressure systems move through the area, bringing gale-force winds from nearly all directions. Temperatures become bitterly cold, freezing external fire mains, wet mooring lines, flume tanks, and any water lines close to the skin of the vessel. Visibility drops to zero in dense clouds, fog, and blizzards.

There is frequently a large swell out of the southwest regardless of wind direction. This causes moored vessels offloading an anchor to lie in the trough in extremely dangerous conditions. In heavy weather the anchorages become congested, and finding a spot calm enough to work, with a safe distance and swinging room from other vessels, is often difficult. The foreign cargo vessels are mostly under Japanese, Korean, or Panamanian registry, and language barriers add to the considerable challenge of bringing vessels alongside or departing in what are often heavy sea conditions.

The first night I arrived at St. Paul Island, the wind was blowing a steady 60 knots with higher gusts. I brought the vessel into Village Cove and found the anchorage stacked with vessels of all sizes and variety. There were dozens of crab boats from 90 feet to 180-foot crab processors, factory trawlers from 200 feet to 350 feet, and about eight Asian freezer ships averaging 300 feet. A vessel was dragging anchor, and the radio was a cacophony of different languages, codes, and unanswered calls. As a new arrival, it was impossible for me to tell which vessel was which or who was dragging. A general sense of confusion pervaded the scene.

I soon regretted bringing my vessel into the midst of vessels packed so tightly in high winds. Finding it impossible to maneuver in such close quarters, we dropped an anchor with just three shots of chain to drag our bow around into the wind so we could get out. I chose a rough anchorage in the swell rather than risk an accident in such close quarters in the dark. That pace did not let up for three months.

AMP Ex. J

Page 1 of 2

Through the winter I spent in the Pribilofs, I witnessed many close calls and actual incidents. There appears to be a certain acceptance of accidents, which are looked at as part of doing business in the Pribilofs. Particularly true of this are vessel landings and departures when the processors offload to foreign tramp freighters. I cannot think of one processor captain I spoke with while there who did not have a repertoire of crash stories, holes, and insurance claims involving tramper arrivals and departures. Accident reports to the Coast Guard are frequent, and hefty insurance claims are filed every year.

As we constantly moved around the island that winter, an entourage of foreign ships without pilots followed us from anchorage to anchorage. When visibility deteriorated, it was extremely hazardous in the anchorages keeping track of who was moving and who was stationary. After coming alongside, it was common practice on many foreign vessels for the entire crew, from captain on down, to be engaged in loading cargo. Radios were not monitored, anchor positions not checked, and mooring lines not tended for hours at a time. It was often a major ordeal raising the vessel alongside to communicate at all.

The pace in the Pribilofs is fast and furious, and vessels engaged in commerce pursue commercial ends sometimes to the detriment of safety and good judgment. In the Pribilofs, the consequences of these misplaced priorities are swift and unforgiving, as evidenced by the many wrecks on the islands' shores. I believe the need and justification for compulsory pilotage in these waters equal or exceed those anywhere else in the state.

Respectfully submitted,
Capt. Will Anderson

April 1, 1992

AMP Ex. J

Page 2 of 2

03-30-1993 20:01 907 581 1372 ALASKA MARINE PILOT P.01
03-30-1993 18:47 PORT OF ST.PAUL P.1/1

	PRODUCT	FUEL	WATER	CARGO	GEAR	PROVISION	R&R AND CREW CHA.	MAINT/PARTS	MARPOL I&IV REFUSE	MARPOL I&IV OIL	DIVER
Jan											
Feb											
Mar	10	5	4	8	9	5	19	7	3	0	0	2
Apr	22	26	9	7	10	16	78	13	2	0	0	0
May	30	43	8	13	30	20	35	10	3	0	0	0
June	20	37	2	6	50	16	14	4	1	0	0	1
July	7	7	4	4	4	3	13	0	0	0	0	0
Aug	12	9	3	6	3	4	23	5	2	0	0	3 (Fish congestion)
Sept	18	4	3	7	13	5	11	5	1	0	0	28
Oct	6	6	1	1	60	2	0	4	0	3	0	0
Nov	9	2	2	4	8	8	5	5	1	0	0	0
Dec	23	16	2	3	2	13	13	5	0	0	0	0
1992 Total	26	37	20	8	8	20	45	14	7	0	0	1
1993	38	33	12	9	7	11	31	9	11	0	0	0
Jan												
Feb												
Mar												
Apr												
May												
June												
July												
Aug												
Sept												
Oct												
Nov												
Dec												

W/ DATE.
ACTIVITY - 1992
FOR 1993
FROM HOME ST. PAUL
MASTER.

1 Year
All Alaskan
Yard Arm Knot
Alaska I

Feb
All Alaskan
Yard Arm Knot
Alaska I

March
All Alaskan
Yard Arm Knot
Sea Alaska
Alaska Packer

April
All Alaskan
Yard Arm Knot
Sea Alaska
Alaska Packer
Omni Sea
Ocean Pride
Clipperton
Alaskan I
Aleutian Falcon
North Isle
Rena Karen Marie

May
All Alaskan
Yard Arm Knot
Sea Alaska
Alaskan Packer
Omni Sea
Ocean Pride
Clipperton
Northlord
Alaskan I
Aleutian Falcon
Coastal Star
Rena Karen Marie

June
Yard Arm Knot
Sea Alaska
Alaska Packer
Omni Sea
Ocean Pride
Clipperton
Northlord
Aleutian Falcon
Coastal Star
Colony
Akutan

2 Year
All Alaskan
Yard Arm Knot

Feb
All Alaskan
Yard Arm Knot

March
All Alaskan
Yard Arm Knot

AMP EX. K

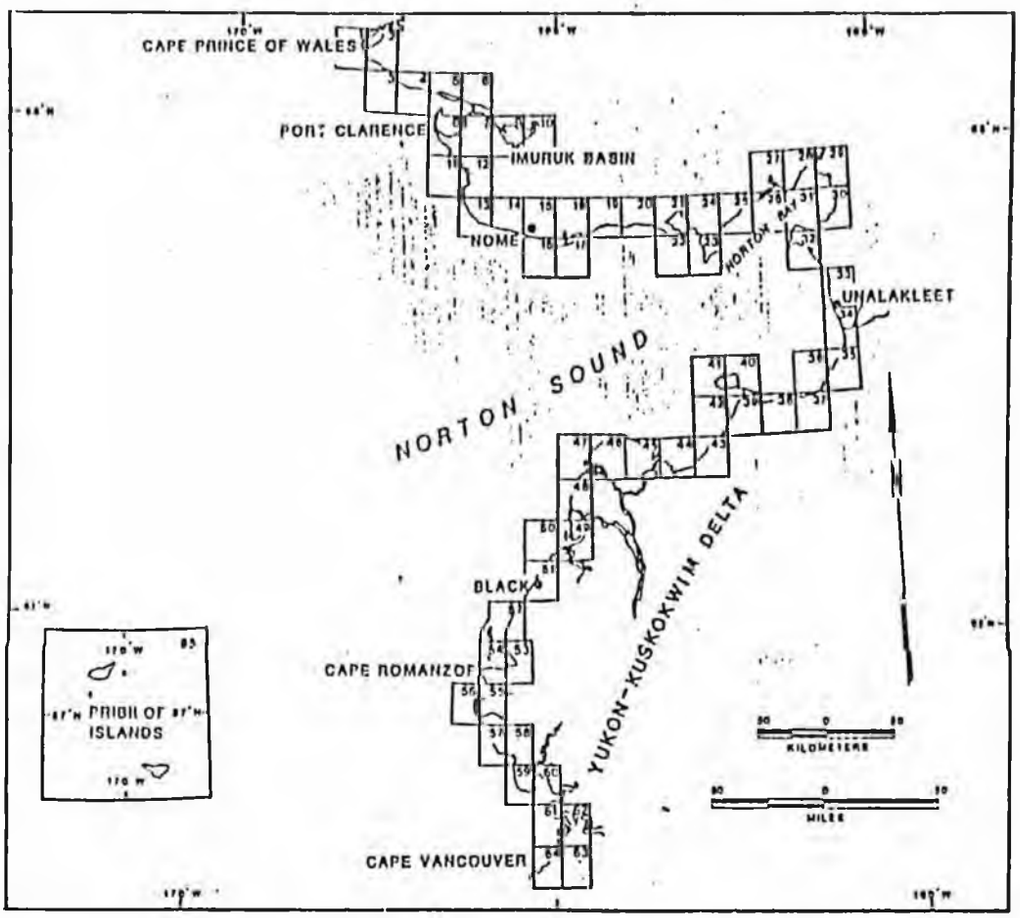
Page 1 of 1

TOTAL PAGE.001

SENSITIVITY OF COASTAL ENVIRONMENTS AND WILDLIFE TO SPILLED OIL

NORTON SOUND AND THE PRIBILOF ISLANDS, ALASKA

AN ATLAS OF COASTAL RESOURCES



ACKNOWLEDGMENTS

We would like to thank the many people who helped bring this project to completion. Dr. Paul R. Becker of the NOAA, Office of Marine Pollution Assessment (OMPA), Alaska office, is commended for his liaison activities between the Bureau of Land Managment and Research Planning Institute, Inc. George Laplene, also of the NOAA Alaska office, very efficiently handled our logistical requests. NOAA pilot Gary Van Den Berg and mechanic Bob Neald kept us flying in spite of two major breakdowns. George Miles, Starnell Perez, Sydney Pearce, Joann Travenger, Len Magnum and Jerry Cole of RPI provided the graphic layout and design.

Funding for the original work and map preparation was provided by the National Oceanic and Atmospheric Administration/Outer Continental Shelf Environmental Assessment Program (NOAA/OCSEAP) through interagency support by the Department of Interior Bureau of Land Management. All maps were completed in 1980. In addition, an 171 page text detailing the coastal resources and protection strategies is available.

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National Oceanic and Atmospheric Administrat
Office of Oceanography and Marine Services
Seattle, Washington
98115

Prepared by:

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Columbia, South Carolina
29201

Sensitivity of Coastal Environments and Wildlife to Oil Spills

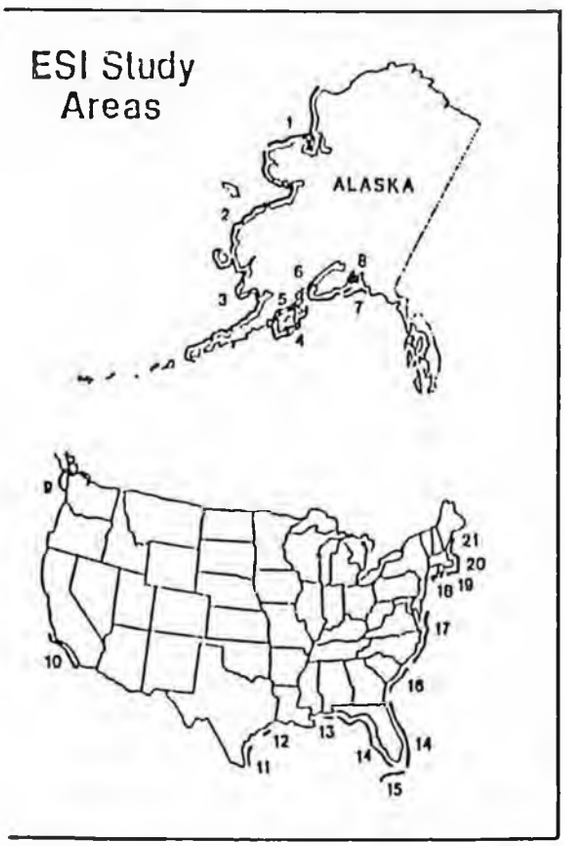
This atlas contains a series of oil spill Environmental Sensitivity Index (ESI) maps designed to guide the U.S. Coast Guard and other spill respc groups toward evaluating the probable hazards of a particular spill and to effectively plan spill control operations. The ESI is based on the scientifi vestigation of several of the largest oil spills in history, including *Amoco Cadiz*, *Urquiola*, and *Metula*. As presented in this atlas, the ESI consist

A. Geological information describing shoreline type in terms of probable spill damage and persistence.
B. Biological data delineating the location and range of major marine species or groups.
C. Socioeconomic data showing the location of special use areas
D. Spill response information indicating locations for primary spill protection and control equipment.

Further description of the particular ESI selected for this atlas is presented on the next page

DEVELOPMENT OF THE ESI

The development of the Environmental Sensitivity Index or oil spills dates back to an initial mapping project funded by Alaska (Department of Fish and Game) for lower Cook Inlet in 1976. Since that time, the mapping projects have been expanded to include biological, socioeconomic and spill response information in response to needs expressed by the U.S. Coast Guard, the National Oceanic and Atmospheric Administration and the Bureau of Land Management. Key references describing this development include (1) E. R. Gundlach and M. O. Hayes, Vulnerability of Coastal Environments to Oil Pollution, Marine Technology Society Journal, 1978, vol 12 p.18-27, (2) M. O. Hayes, E. R. Gundlach and C. D. Getter, Sensitivity Ranking of Energy Port Shorelines, Proceedings of a Specialty Conference on Ports, American Society of Civil Engineers, New York, 1980, p. 697-709, and (3) C. D. Getter, L. C. Thebeau, T. Ballou and J. J. Maiero, Mapping the Distribution of Protected and Valuable Oil Sensitive Coastal Fish and Wildlife, 1981 Oil Spill Conference, American Petroleum Institute, Washington, D.C., p. 325-329.



AVAILABLE ESI MAPS AND REPORTS

UNITED STATES

1. KOTZEBUE SOUND, ALASKA.
   Point Hope to Cape Prince of Wales.
   Report and 33 maps; partially completed
2. NORTON SOUND AND PRIBILOF ISLANDS, ALASKA
   Cape Prince of Wales to Cape Vancouver and the Pribilof Islands.
   Report and 65 maps.
3. BRISTOL BAY, ALASKA.
   Cape Vancouver to Unimak Island.
   Report and 106 maps.
4. KODIAK ISLAND, ALASKA.
   South shore of Kodiak, Afognak, and the Trinity Islands.
   Report and 47 maps; partially completed.
5. SHELIKOF STRAIT, ALASKA.
   Port Wrangel to Cape Douglas on the Alaska Peninsula, and the northern side of Kodiak Afognak Islands.
   Report and 47 maps.
6. LOWER COOK INLET, ALASKA.
   Cape Douglas to the Chugach Islands.
   Report and 34 maps; partially completed.
7. OUTER KENAI PENINSULA, ALASKA
   Report and 23 maps, partially completed.
8. PRINCE WILLIAM SOUND/COPPER RIVER DELTA, ALASKA
   Cape Resurrection to Cape Suckling, including Kayak Island.
   Atlas report and 42 maps.
9. STRAIT OF JUAN DE FUCA/PUGET SOUND, WASHINGTON.
   Atlas report and 82 maps.
10. SOUTHERN CALIFORNIA.
    Point Conception to Mexican border, including all offshore islands.
    Report and 58 maps.
11. SOUTH TEXAS.
    Bixios Santiago Pass of Aransas Pass.
    Report and 15 maps.
12. GALVESTON BAY, TEXAS.
    Atlas report and 19 maps.
13. ALABAMA.
    Atlas report and 23 maps.
14. FLORIDA
    Entire state except for south Florida.
    Several reports and 204 maps.
15. SOUTH FLORIDA.
    Florida Keys to Boca Raton
    Report and 23 maps.
16. SOUTH CAROLINA.
    Report and 50 maps.
17. NORTH CAROLINA, VIRGINIA, MARYLAND.
    250 maps.
18. LONG ISLAND SOUND.
    North shore of Long Island and all of Connecticut.
    Atlas report and 54 maps.
19. RHODE ISLAND (including Fall River, Massachusetts).
    Atlas report and 17 maps.
20. MASSACHUSETTS.
    Report and 55 maps.
21. SOUTHERN MAINE AND NEW HAMPSHIRE.
    Massachusetts border to the Kennebec River, Maine.
    Atlas report and 25 maps.

INTERNATIONAL

Panama: Laguna de Chiriqui (Atlantic) and Bahia de Charco Azul (Pacific).

Kuwait: Entire coast

rpi inc. columbia, s.c.

AMP Ex. L

ENVIRONMENTAL SE... ...
NORTON SOUND AND THE PRIBILOF ISLANDS, ALASKA

SHORELINE TYPES

All shoreline types were classified during a low-altitude aerial survey using a National Oceanic and Atmospheric Administration helicopter during the summer of 1980. The different shoreline types found in Norton Sound and the Pribilof Islands are ranked below in order of increasing sensitivity. Environments 8, 9 and 10 are most sensitive and should receive priority protection during an oil spill.

Sensitivity

1. Exposed rocky headlands.
2. Wave cut platforms.
3. Fine grained sand beaches.
4. Coarse grained sand beaches.
5. Exposed tidal flats.
6. Exposed, mixed sand and gravel beaches.
7. Gravel beaches.
7A. Sheltered, mixed sand and gravel beaches.
7B. Basalt boulder beaches.
8. Sheltered rocky shores.
8A. Eroding peat scarps.
9. Sheltered tidal flats.
10. Marshes.

BIOLOGICAL RESOURCES

Information pertaining to the biological resources of the study area were collected during the field survey of 1980 and from other investigations. Areas having important biological populations should be given high response priority.

MARINE MAMMALS
- Seals and walruses — Pupping or haulout grounds
- Whales — Migration and summer residence

MARINE BIRDS
- Alcids — Rookeries and critical forage areas
- Diving birds
- Gulls and Terns
- Shorebirds
- Waterfowl

FISHES
- Salmon — Spawning areas or runs
- Herring — Spawning areas

SHELLFISH
- Clams — Abundant clam areas

SUBTIDAL VEGETATION
- Eelgrass beds — Abundant *Zostera* beds

SOCIOECONOMIC AND SPILL-RESPONSE INFORMATION

Cleanup efforts in areas having socioeconomic importance should be particularly careful. Information concerning spill-response activities, particularly oiling, was included to provide preliminary direction to the response effort.

- Archaeological sites
- Private lands
- Landing strips
- Boom location
- Recommended closures
- Mining claims
  - Onshore
  - Offshore
- Washovers
- Station locations

KEY TO SPECIES

MAMMALS		
6.	Beluga whale	*(Delphinapterus leucas)*
18.	Walrus	*(Odobenus rosmarus)*
SHELLFISH		
25.	Soft shell clam	*(Mya arenaria)*
BIRDS		
B.	Various shorebirds	
C.	Various waterfowl	
F.	Various seabirds	
10.	Pelagic cormorant	*(Phalacrocorax pelagicus)*
28.	Harlequin duck	*(Histrionicus histrionicus)*
38.	Herring gull	*(Larus argentatus)*
45.	Common tern	*(Sterna hirundo)*
48.	Common murre	*(Uria aalge)*
47.	Pigeon guillemot	*(Cepphus columba)*
48.	Marbled murrelet	*(Brachyramphus marmoratus)*
51.	Tufted puffin	*(Lunda cirrhata)*
78.	Cormorant	*(Phalacrocorax sp.)*
80.	Arctic tern	*(Sterna paradisaea)*
81.	Horned puffin	*(Fratercula corniculata)*
82.	Glaucous gull	*(Larus hyperboreus)*
84.	Parakeet auklet	*(Cyclorrhynchus psittacu*
95.	Roseate tern	*(Sterna dougallii)*
100.	Black-legged kittiwake	*(Rissa tridactyla)*
101.	Aleutian tern	*(Sterna aleutica)*
103.	Common eider	*(Somateria mollissima)*
104.	Murre	*(Uria sp.)*
105.	Thick billed murre	*(Uria lomvia)*
107.	Peregrine falcon	*(Falco peregrinus)*
108.	Kittlitz's murrelet	*(Brachyramphus brevirost*
109.	Crested auklet	*(Aethia cristatella)*
110.	Dovekie	*(Alle alle)*
111.	Least auklet	*(...nia pusilla)*
112.	Black guillemot	*(...phus grylle)*
113.	Gyrfalcon	*(F... co rusticolus)*
114.	Sabine's gull	*(Xema sabini)*
FISH		
64.	Gulfback rockfish	*(Sebastes maliger)*
66.	Pacific herring	*(Clupea harengus pallasi)*
68.	Chinook Salmon (king)	*(Oncorhynchus tshawytscha*
69.	Coho salmon (silver)	*(Oncorhynchus kisutch)*
70.	Pink salmon (humps)	*(Oncorhynchus gorbuscha)*
71.	Sockeye salmon (red)	*(Oncorhynchus nerka)*
72.	Chum salmon (dog)	*(Oncorhynchus keta)*

● ENDANGERED

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  - SHOREBIRDS
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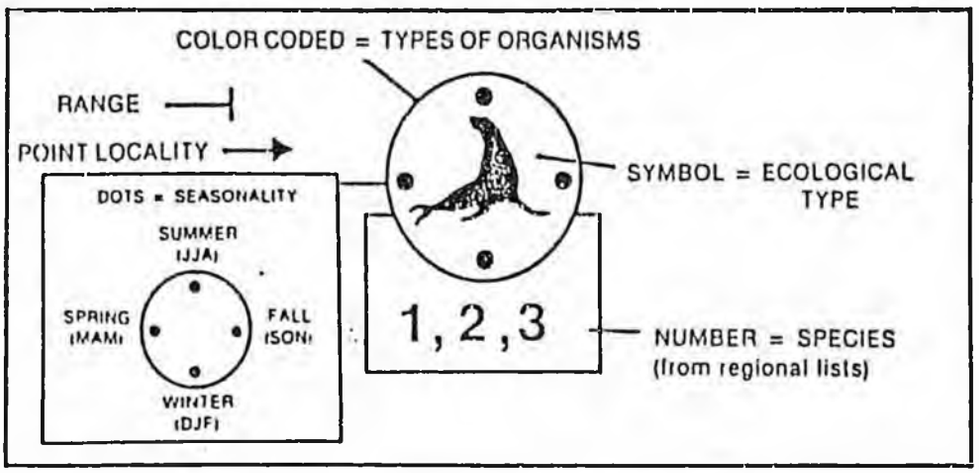

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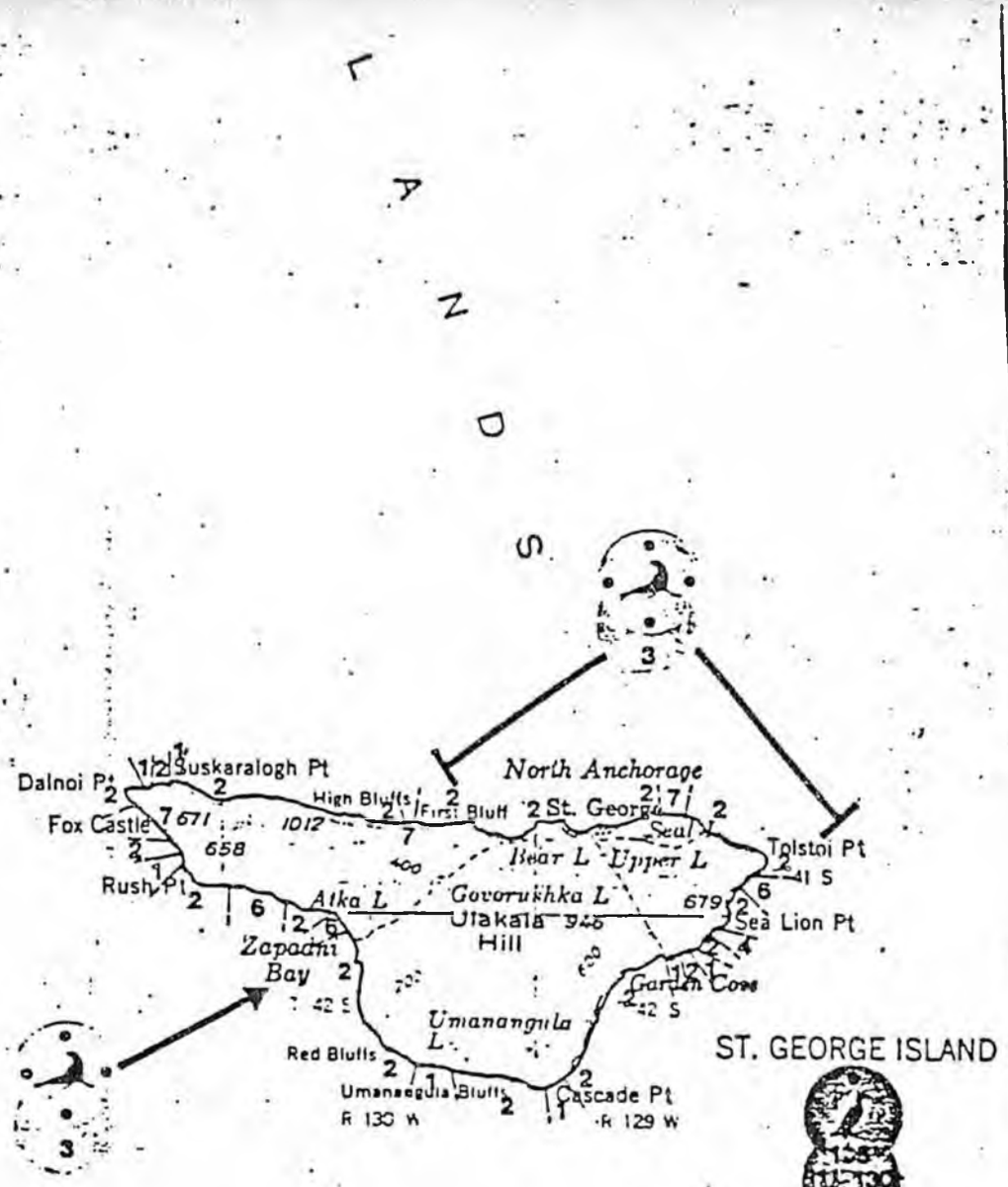

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ESI MAP
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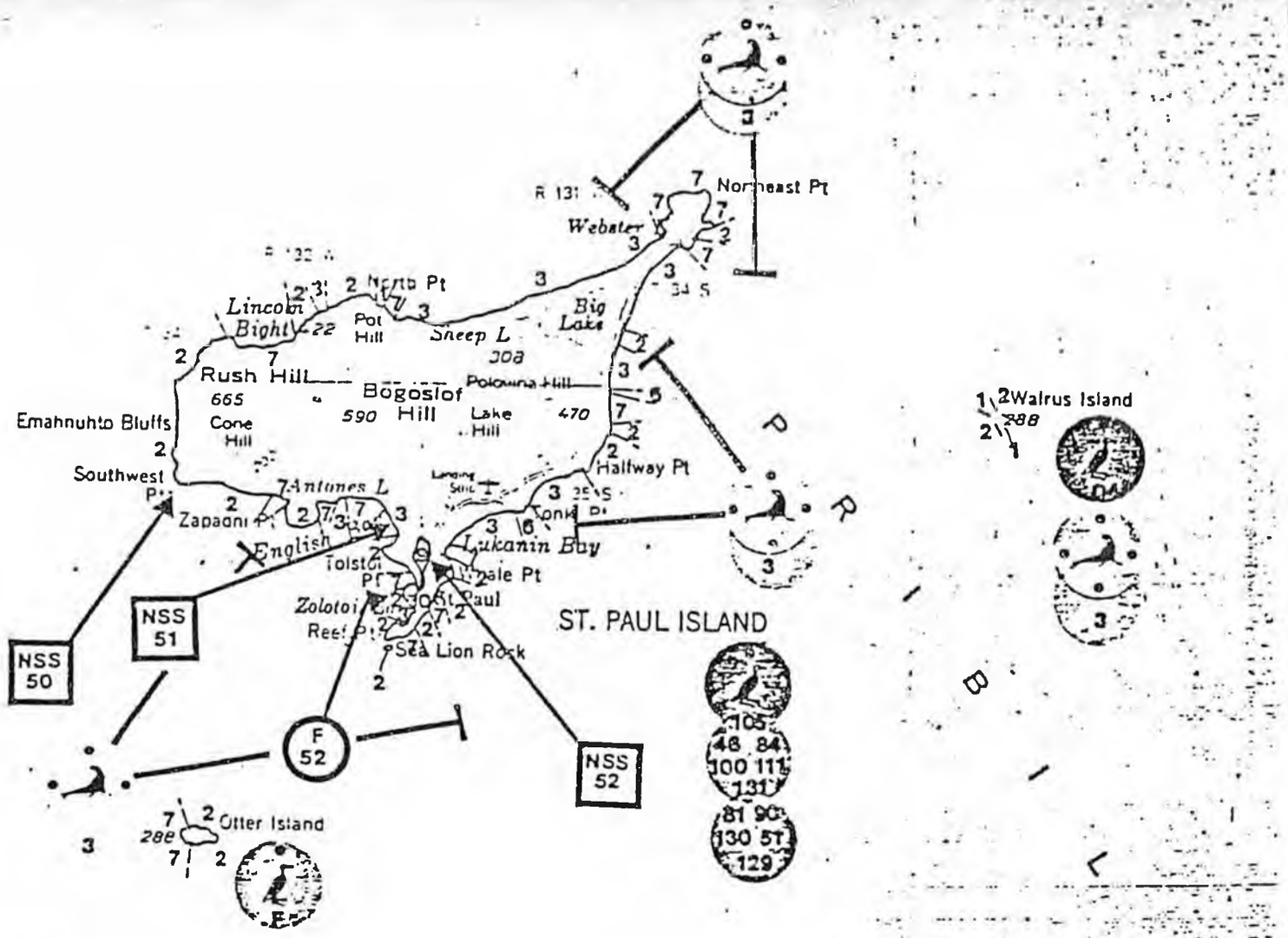

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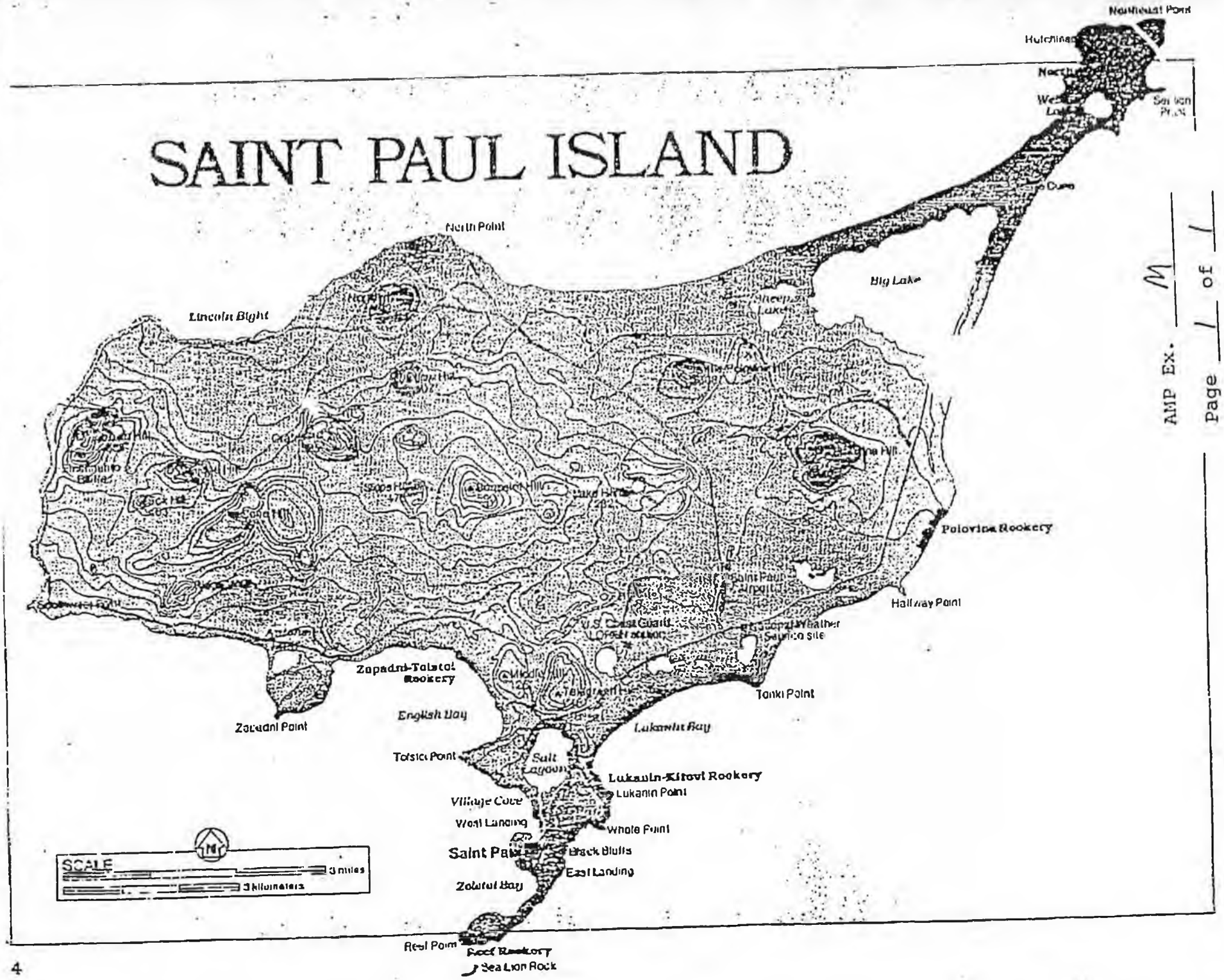

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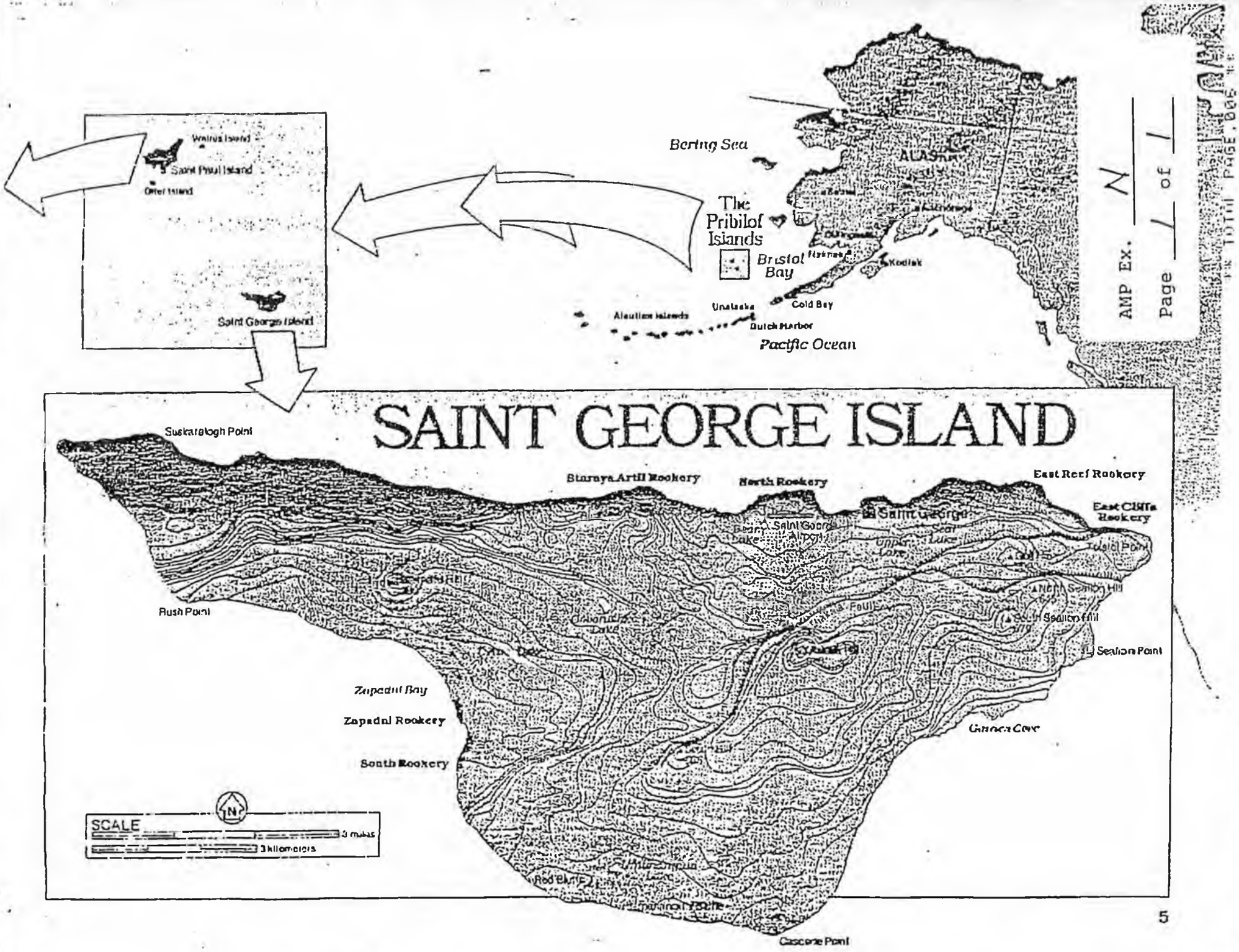

AMP Ex. N

Page 1 of 1

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

March 27, 1992

Mr. Bob Watt
Chairman, Board of Marine Pilots
c/o Department of Commerce and Economic Development
P.O. Box D-LIC
Juneau, Alaska 99811-0800

Dear Mr. Watt,

The Alaska Region of the National Marine Fisheries Service (NMFS) was recently contacted by Mr. Tom Dundas of the Alaska Marine Pilots Association regarding any concerns our agency might have about the impact of vessels using the ports of St. Paul and St. George on northern fur seals.

With the recent development of these ports, vessel traffic around the islands has increased substantially. In last few years several vessel groundings occurred but fortunately none has resulted in oil spills that adversely impacted the fur seal stocks that reside on these islands. Although the NMFS does not know if the use of Alaska Marine Pilots would reduce vessel mishaps in the vicinity of these island's ports, the NMFS favors any action that reduces the possibility of these types of problems.

If you have any questions regarding fur seals on the Pribilof Islands, please contact Brad Hanson at 586-7233.

Sincerely,

Steven T. Zimmerman
Chief, Protected Resources
Management Division

AMP Ex. O

Page 1 of 1

United States Department of the Interior

ALASKA MARITIME NATIONAL WILDLIFE REFUGE
202 W. Pioneer
HOMER, ALASKA 99603

IN REPLY REFER TO:

April 1, 1992

Mr. Bob Watt
Chairman, Board of Marine Pilots
c/o Department of Commerce and Economic Development
P.O. Box D-LIC
Juneau, Alaska 99811-0800

Dear Mr. Watt,

Our office was recently contacted by Will Anderson of the Alaska Marine Pilots Association regarding any concerns our agency might have about the impact of vessels on the Pribilof and St. Matthew Island areas.

All of Walrus, Otter and the cliffs on St. George and St. Paul in the Pribilof Islands are National Wildlife Refuges. Also, all of St. Matthew, Hall and Pinnacle Islands, 180 miles to the north, are National Wildlife Refuges. These areas were set aside because of there great wildlife significance, particularly for seabirds and marine mammals. Combined these area contain nearly 4 million nesting seabirds and are the breeding grounds for hundreds of thousands of marine mammals.

Vessel grounding pose the threat of oil spills and the possible introduction of rats. Even a moderate size oil spill near these large colonies could concievalbly kill more seabirds and marine mammals than the Exxon Valdez spill. The introduction of rats through shipwreck is a very significant danger and could be more disastrous, in the long run, than an oil spill. Once established, rats could not likely be eliminated. They would feed directly on birds and could transfer several disease to marine mammals.

The Fish and Wildlife Service favors any reasonable action that would reduce the likelihood of shipwrecks. This would include requirements for marine pilots if it were felt that this would reduce possibilities of these types of safety hazards. If you have any further questions about this issue, please contact me @ 235-6546.

Sincerely,

John Martin

AMP Ex. P

Page 1 of 1

U. S. DEPARTMENT OF THE INTERIOR
Minerals Management Service
Alaska OCS Region
P.O. Box 101159
Anchorage, Alaska 99510

PROPOSED NOTICE OF SALE
OIL AND GAS LEASE SALE NO. 89
OUTER CONTINENTAL SHELF
ST. GEORGE BASIN (SEPTEMBER 1985)

AMP Ex. Ⓠ

(i) Areas of Special Biological Sensitivity. Lessees are advised that certain areas are especially valuable for their concentration of marine birds, marine mammals, and/or fishes. The Fox Islands, Unimak Pass, the Pribilof Islands, Chagulak Island, and Moffet, Nelson, and Izembek Lagoons are among areas of special biological sensitivity to be considered under terms of the oil spill contingency plan section of Alaska OCS Order No. 7. The State of Alaska has also identified the Pribilof Islands and the Aleutian Chain. Lessees are advised that additional areas of special biological sensitivity may be defined by the MMS, other Federal Agencies, local coastal management programs, and by local and regional organizations such as the Coastal Resource Service Area (CRSA) Boards, planning offices, village councils, and regional non-profit corporations. Lessees are advised that the review of oil spill contingency plans may result in special measures being required to protect the areas' biological resources and associated subsistence values.

(j) Coastal Zone Management. Lessees are advised that the Alaska Coastal Management Program (ACMP) may contain policies and standards which may be relevant to exploration, development, and production activities associated with leases resulting from this sale. In addition, approved local CMP's which are part of the ACMP may contain more specific policies related to energy facility siting; areas with particular geologic hazards, subsistence uses, habitats, and transportation uses; and areas which have historic or prehistoric resources.

Coastal districts with approved CMP's may have policies applicable to ACMP consistency reviews of postlease activities. Coastal districts near the lease area engaged in program development or implementation include: Yukon-Kuskokwim CRSA, the Bristol Bay CRSA, and the Aleutians East CRSA, Bristol Bay Borough and the Cities of Bethel, Akutan, and St. Paul. Early consultation and coordination with the State and coastal districts involved in coastal management review is encouraged.

The MMS anticipates that the State will review exploration plans and development and production plans, and pipeline rights-of-way applications for consistency with the State CMP pursuant to section 307(c)(3)(B) of the Coastal Zone Management Act. As specified in section 307(c)(3)(B), the State has the right to disagree with the lessee's certification of consistency for the lessee's plans for exploration, development, and production, or pipeline rights-of-way applications and may recommend additional measures be taken by the lessee, as a condition of certification, that will ensure that the transportation, storage, and loading of produced oil is consistent with the ACMP.

(k) Bering Sea Biological Task Force. In the enforcement of the Protection of Biological Resources stipulation, the RSFO will receive recommendations from the Bering Sea Biological Task Force (BTF) composed of designated representatives of the MMS, the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service, and EPA. Representatives from the State of Alaska are encouraged to participate in the proceedings of the BTF. The RSFO will consult with the Bering Sea BTF on the conduct of biological surveys by lessees, and the appropriate course of action after surveys have been conducted.

AMP Ex. Q

(l) Bird and Marine Mammal Protection. Lessees are advised that during the conduct of all activities related to leases issued as a result of this sale, the lessee and its agents, contractors, and subcontractors will be subject to, among others, the provisions of the Marine Mammal Protection Act of 1972, as amended; the Endangered Species Act of 1973, as amended; and International Treaties.

Lessees and their contractors should be aware that disturbance of wildlife could be determined to constitute harm or harassment, and thereby be in violation of existing laws. With respect to endangered species, disturbance could be determined to constitute a "taking" situation and be in violation of the Endangered Species Act. Under the Endangered Species Act, the term "take" has been defined to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Violations under these acts and treaties may be reported to the National Marine Fisheries Service or the FWS, as appropriate. Behavioral disturbance of most birds and mammals found in or near the lease area would be unlikely if surface vessels maintained at least a 1-mile horizontal distance and aircraft maintained a 1,500-foot vertical distance from observed wildlife concentrations or from known wildlife concentration areas such as bird colonies and marine mammal haulout and breeding areas. Therefore, it is recommended that vessels operated by lessees maintain at least a 1-mile horizontal distance and that aircraft maintain a 1,500-foot vertical distance from observed or known wildlife concentrations.

Of particular concern are wildlife populations of the Pribilof Islands, Izembek Lagoon, and other coastal wilderness or refuge areas. For guidance regarding prohibited activities, attention of the lessees is directed particularly to existing National Wildlife Refuge System rules, 50 CFR Parts 27 and 215, and Part 36, rules for the Alaska National Wildlife Refuges (46 FR 31818, June 17, 1981), wherein 50 CFR 36.21(c) states: "The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited."

To reduce potential effects to all cetacean species from noise and disturbance associated with vessel and aircraft activities, lessees are encouraged to reduce, minimize, or reroute vessel and/or aircraft operations to and from the lease area by aircraft and/or marine vessels. This includes aircraft, tugs, barges, supply ships, hovercraft, or other self-propelled surface vessels when whales are likely to be in the area. Lessees are advised that operations including geophysical surveys may be restricted or suspended, if appropriate, by the RSFO, on any lease, whenever endangered whales are present in the area or sufficiently near to be subject to disturbance from offshore oil and gas activities which would be likely to constitute a "taking" situation. A Notice to Lessees (NTL) has been issued to specify performance standards before any preliminary activities may be conducted on a lease. Human safety will take precedence at all times over these provisions.

Maps locating major wildlife concentration areas in the lease area are suitable for general route planning and are available from the RSFO.

(m) Aleutian Canada Goose. Lessees are advised that the Aleutian Canada goose (Branta canadensis leucopareia) is listed as an e[illegible] the U.S. Department of the Interior (16 U.S.C. 1531 et

AMP Ex. Q

Confirm. Hrgs.

Brd. of

Marine

Pilots, 1991

REVISION DATE: 4/15/92

MARINE PILOTS

MEMBER	APPT	REAAPT	REAPPT	TERM
Ann Boudreaux DCED/P.O. Box D Juneau 99811 Commissioner/DCED	0/00/00	0/00/00	0/00/00	0/00/00
✓ Dale Collins P.O. Box 6100 Ketchikan 99901 Pilot/Southeast	91/06/12	0/00/00	0/00/00	95/06/01
✓ Keith Greba 504 Monastery Street Sitka 99835 Public	91/06/12	0/00/00	0/00/00	95/06/01
William C Lorch P.O. Box 19-0224 Anchorage 99519 Agent	88/10/28	0/00/00	0/00/00	92/06/01
Michael J O'Hara P.O. Box 1443 Palmer 99645 Pilot/Southwest	89/08/28	0/00/00	0/00/00	93/06/01
Russell M Sell 1727 West 11th Street Anchorage 99501 Public	88/10/28	0/00/00	0/00/00	92/06/01
Bob Watt ✓ 6227 S. Tongass Ketchikan 99901 Agent	91/07/22	0/00/00	0/00/00	94/06/01

February 10, 1992

The Honorable Ben Grussendorf
Speaker of the House
Alaska State Legislature
State Capitol
Juneau, AK 99801-1182

Dear Speaker Grussendorf:

In accordance with AS 39.05.080 and Article III, Sections 25 and 26, of the Alaska Constitution, I submit the following names for legislative confirmation of appointment to the positions noted:

Alaska State Board of Public Accountancy

Elaine Damm - Kodiak
Term began 11/14/91 expires 4/25/92
Bruce J. Ogle, CPA - Anchorage
Term began 8/14/91 expires 4/25/92
Jean B. Schmitt, CPA - Fairbanks
Term began 11/4/91 expires 4/25/93
Bradley L. Shaffer, CPA - Sitka
Term began 8/14/91 expires 4/25/93
Joanne Stoots - Fairbanks
Term began 1/27/92 expires 4/25/95
John C. Swalling, CPA - Anchorage
Term began 7/17/91 expires 4/25/95

Alcoholic Beverage Control Board

William M. Bishop - Kodiak
Term began 1/14/92 expires 1/31/93
W.E. "Brad" Bradley - Anchorage
Term began 1/31/92 expire 1/31/95
James B. Elkins - Ketchikan
Term began 6/12/91 expires 1/31/94
James J. McNamee - Fairbanks
Term began 6/12/91 expires 1/31/94

State Commission for Human Rights
Edna DeVries - Palmer
Term began 2/1/92 expires 1/31/97

Commission on Judicial Conduct
Patrick T. Brown - Fairbanks
Original term began 4/10/87 reappointed 7/17/91
expires 4/28/95
Susan A. Burke - Juneau
Term began 7/17/91 expires 4/28/95
Sharon Nahorney - Anchorage
Original term began 7/16/91 reappointed 1/1/92
expires 12/31/95
Kenneth E. Peavyhouse - Anchorage
Term began 11/14/91 expires 12/31/94

Judicial Council
Jim A. Arneson - Anchorage
Term began 10/4/91 expires 5/18/95

Alaska Labor Relations Agency
James W. Elliott - Anchorage
Term began 1/22/92 expires 6/30/94

Board of Marine Pilots
Dale O. Collins - Ketchikan
Term began 6/12/91 expires 6/1/95
Keith Greba - Sitka
Term began 6/12/91 expires 6/1/95
Robert M. Watt - Ketchikan
Term began 7/22/91 expires 6/1/94

Board of Mechanical Examiners
Jack B. Wilbur, Sr. - Fairbanks
Term began 7/17/91 expires 6/9/94

State Medical Board
Noel W. DeVries - Palmer
Term began 12/9/91 expires 8/13/92

CITY OF SAINT PAUL.
POUCH 1
SAINT PAUL ISLAND, ALASKA
99660
(907) 546-2331
Telecopy (907) 546-2366

IN REPLY
REFER TO:

April 13, 1992

Senator Fred Zharoff
Room 416, Capitol Building
P.O. Box V
Juneau, AK 99811

FAX: 463-3043

RE: Alaska Board of Marine Pilots

Dear Senator:

This is to confirm my telephone conversation with your staff this morning. I am looking forward to meeting with you and/or your staff Tuesday, April 14, at 11 AM. 465-3242

The Alaska Board of Marine Pilots (ABMP) will take public comments on Wednesday, April 15, 1992 to discuss a proposal submitted to them by the Marine Pilots Association (MPA). What the MPA is proposing is to extend compulsory pilotage waters around the Pribilof Islands out to 3 miles around the Islands. We suggest one of the following:

1. No designated zone\zones around the Pribilof Islands, or

2. With the zone already in place, no additional designations, or

3. A cost\benefit and economic impact analysis be done before considering any further designations.

Currently, there is a designated zone between Zapadni Point and Reef Point which is on the harbor side of the Island.

Should the ABMP accept the proposal as submitted by MPA, representatives of the floating processing industry that do business in our waters have indicated that the added expense of doing business around the Pribilofs has the potential of forcing them to go elsewhere in order to remain competitive in the market. Should this happen, the loss of much needed revenues to our communities will be lost. At a time when the State and Federal governments are cutting back on revenues, we feel this will be devastating to our developing economy.

Senator Zharoff
Page Two

We respectfully request that you support our position with the ABMP to not act on this proposal from the MPA.

We are looking forward to meeting with you.

Respectfully,

George

George Pletnikoff
Admn. Asst.

cc: Representative George Jacko Jr.

Alaska Coastwise Pilots' Association
P.O. BOX 22694
JUNEAU, ALASKA 99802
PHONE: (907) 586-2272
FAX: (907) 463-3773

Marine Pilotage Dispatch Service
Ketchikan Office
PHONE: (907) 225-7245
FAX: (907) 247-4568

April 13, 1992

Governor Walter J. Hickel
P.O. Box K
Juneau, Alaska 99811

HAND DELIVERED
COPY BY CERTIFIED MAIL

Re: Alaska Coastwise Pilots' Association
Our file no. 2102.3

Dear Governor Hickel:

Attached are copies of letters which have been circulated to all deck officers employed by the State of Alaska Marine Highway System. We believe these letters were written and circulated at the request of, and in combination with, your appointee to the State Marine Pilot Board, Dale O. Collins; the International Masters, Mates & Pilots' Union; and the Southeastern Alaska Pilots' Association ("SEAPA"), of which Collins is a member and past officer.

These letters seek to discourage Marine Highway System deck officers from working with ACPA and to prevent ACPA trainees from obtaining training trips on the state ferries necessary to qualify for their United States Coast Guard and State of Alaska licenses. Recent events confirm this intent with a vengeance.

This spring, Captain Kathleen Rathgeber began participating in the ACPA's training program for prospective deputy marine pilots. Captain Rathgeber has excellent credentials. She is a graduate of the U.S. Merchant Marine Academy at Kings Point, New York; is licensed as Master of Ocean Steam or Motor Vessels of Any Tons; and has served in all capacities up to staff captain of cruise ships.

Until this week, Captain Rathgeber was riding the State of Alaska, Marine Highway System's M/V TAKU as a pilot observer, in order to obtain the area exposure and recency trips necessary for her license. It was our understanding, based on assurances from Captain Kelly Mitchell of the Marine Highway System, that she was welcome to ride the M/V TAKU as part of her effort to obtain a pilot's license.

This changed when the attached letter from the IOMM&P was circulated last week to all deck officers employed by the State of Alaska's Marine Highway System. When the M/V TAKU docked in Ketchikan this week, this letter was delivered to the vessel's deck officers. Your appointee to the State Pilot Board, Dale O. Collins, then apparently met with the Captain of the M/V TAKU.

After meeting with your appointee, the Captain of the M/V TAKU advised Captain Rathgeber that he would no longer sign her trip logs or otherwise assist her in her efforts to obtain the training required for a state pilot's license. He advised Captain Rathgeber that all other deck officers employed by the State of Alaska's Marine Highway System would join in the boycott of her efforts to obtain this necessary training. At his suggestion, Captain Rathgeber left the M/V TAKU at Auke Bay.

It is our belief that the IOMM&P circulated the attached letter at the request of, in combination with, and in furtherance of certain illegal, monopolistic or tortious goals of Collins and SEAPA. The letter interferes in contractual relations between ACPA, its associated pilots, and its customers, and is the latest in a pattern of practi- by the Union, Collins and SEAPA aimed at injuring o' business efforts.

Now, as you can see from the second attached letter from the Captain of the M/V TAKU to the deck officers of the ferry system, the State of Alaska has become engaged in these efforts to injure, defame, and destroy our business. It is highly inappropriate for public employees, operating public facilities, and employed by a public agency to participate in these collusive actions.

The members of ACPA have built our business to what it is today by our own hard work and our steadfast dedication to the highest standards of our profession. To meet our high standards, and to obtain their licenses, ACPA pilot trainees need a full and fair opportunity to ride the ferries of the Alaska Marine Highway System.

If given the chance, Captain Kathleen Rathgeber will be a valuable addition to the marine pilot profession in Alaska. But Captain Rathgeber needs that chance, which you can provide by directing the Alaska Marine Highway System to open its bridges to all pilot trainees, without any form of discrimination.

We trust that you believe in private enterprise and, pursuant to our rights under Article I, Section 6 of the Alaska Constitution, we petition you to take all appropriate steps to immediately resolve this issue.

Respectfully,

Terry K. Bennett

Captain Terry K. Bennett
President
Alaska Coastwise Pilots' Association

cy: Burton Epstein, Esq.
General Counsel
International Masters, Mates & Pilots Union

Mr Bob Watt,
Chairman,
State Board of Marine Pilots

James R. Ayers
System Director
Captain Kelly Mitchell
Port Captain
Alaska Marine Highway System

Tuckerman Babcock
Director, Boards and Commissions
Office of the Governor

Charles E. Cole, Attorney General
Bruce M. Botelho, Deputy Attorney General
Gary I. Amendola and Jack B. McGee, Assistant
Attorneys General
Department of Law

Captain Carl Luck
Marine Pilot Coordinator
Department of Commerce and Economic Development

Honorable Virginia Collins
Honorable Rick Halford
Honorable Jim Duncan
Alaska State Senate

Honorable Dave Donley
Honorable Bill Hudson
Honorable Fran Ulmer
Alaska House of Representatives

MV TAKU
8 APRIL, 1992

MM & P MASTERS/MATES
ALASKA MARINE HIGHWAY

SHIPMATES:

THE TEMPERATURE RISES IN THE DIRTY LITTLE PILOT WAR OVER SOUTHEAST TURF. IT IS A DAMN SERIOUS BATTLE THAT ALREADY INVOLVES EVERY ONE OF US.

AFTER MEETING WITH T. BENNETT, M. SPENCE, AND D. COLLINS THIS PAST WEEK, I AM CONVINCED THAT OUR MARINE HIGHWAY JOBS ARE AT RISK. MOST (NOT JUST ONE) OF THE S.E.A. PILOTS ARE INCENSED ENOUGH TO RAID OUR POSITIONS SHOULD THEIR GROUP GO DOWN (TURPIN LOVES IT!). THEY HAVE GOOD REASON TO BE PASSIONATELY PISSED: THEIR UNION "BROTHERS" (OUR CO-WORKERS) HAVE HELPED STEAL THE SWEETEST CRUISE SHIP CONTRACT, WHILE ON "VACATION" FROM THESE JOBS AND SECURE UNDER OUR HEALTH AND WELFARE UMBRELLA. LIKE MOST MARRIAGES, THIS BREAK WITH THE S.E.A. PILOTS IS LARGELY THE RESULT OF MISUNDERSTANDING AND POOR COMMUNICATION.

DOUG, CHUCK, JOHN! SIT DOWN AND TALK TO DALE AND COMPANY. YOU WILL, EVENTUALLY--BETTER NOW BEFORE ANY MORE BLOOD FLOWS. SURRENDER YOUR EGOS AND DO WHAT YOU KNOW IS RIGHT BEFORE YOU FURTHER TEAR THESE MEMBERSHIPS APART. DO NOT MAKE THE MISTAKE OF UNDERESTIMATING THE THREAT TO THESE JOBS.

FOR MY PART, I REFUSE TO SIGN ANOTHER PILOTAGE TRIP UNTIL THE PILOT GROUPS ARE ONE. I ASK MY COLLEAGUES TO FOLLOW LYNESS' LEAD AND DO THE SAME. THE TAKU PILOT OBSERVER LEAVES THE SHIP IN AUK BAY THIS MORNING. GLAD, I BELIEVE, TO BE SPARED MORE GRIEF.

HERE'S TO SANITY NOW, NOT LATER!

VERY SERIOUSLY,

SHEP

K. SCHOEPPE

INTERNATIONAL ORGANIZATION OF MASTERS, MATES & PILOTS

PACIFIC MARITIME REGION

2815 First Avenue, #100 ★ Seattle, Washington 98121-1125 ★ Telephone: (206) 441-1070 ★ FAX: (206) 443-8758

March 31, 1992

TO: Deck Officers of the Alaska Marine Highway System

Dear Fellow Deck Officers:

I am writing to you regarding the piloting situation in Southeast Alaska. I am sure most of you are aware of the non-recognized pilotage group that has split away from the Southeast Alaska Pilotage Association, which has been recognized by the International Organization of Masters, Mates and Pilots since its inception. Three members of the Pacific Maritime Region employed by the Alaska Marine Highway System, as well as members of other membership groups, have agreed to perform pilotage services for this new split-off pilot group. I have also recently heard that a number of other Deck Officers of the Alaska Marine Highway System are considering working as pilots for this splinter group in the near future.

The International Organization of Masters, Mates and Pilots is very concerned that if this situation with the Pilots continues or worsens, it will have a tremendous repercussion on the jobs and working conditions of all Deck Officers employed by the Alaska Marine Highway System.

Your Union is asking for solidarity and the support of all Deck Officers regardless of membership group in order to help resolve this situation.

I am deeply concerned that any member continuing to work, or any other members accepting employment with this new splinter group, will cause a reaction against our jobs that we may not be able to stop. *

This Organization supports one Pilotage Group in Southeast Alaska under the umbrella and affiliation with the International Organization of Masters, Mates and Pilots and will continue efforts to bring the parties involved together in negotiations to resolve their problems.

Fraternally,

CAPTAIN DAVE A. BOYLE
Vice President
Pacific Maritime Region

DAB:s

cc: General Executive Board
Mr. Burton Epstein General Counsel

* CHARGES WILL BE FILED AGAINST MMS M.M.P. MEMBERS WHO CONTINUE TO WORK FOR THE AK. COASTWISE PIL. T. U.

PERSONAL RESUME --- ROBERT M WATT
11/90

PERSONAL

Home address:
6227 S. Tongass
Ketchikan, Alaska 99901
Phone (907) 225-2795
Date of Birth: June 19, 1940
Married: wife - Nancy M. Watt
Children: 2 sons, ages 18 & 13
Health - good
Height: 5' 8"
Weight: 156 lbs.
Citizenship: American

EDUCATION

1968 B.A. (cum laude) - Univ. of Victoria, Victoria, B.C.
Major - Urban Geography
Post Graduate: Studied toward M.A. at Univ. of Alberta, Edmonton,
Major - Urban Geography & City Planning with special interest in Alaskan ports of Anchorage and Skagway

MILITARY SERVICE

Served in the Royal Canadian Air Force and was honorably discharged

WORK EXPERIENCE

Jan. 1987 - Present
Vice President of West Coast Stevedoring Corp., a wholly owned subsidiary of Klukwan, Inc., responsible for the marine division. During this period of rapid growth of the whole corporation, there were two main areas of responsibility. One was for the tugs and barges that the company bought and/or leased and then operated. This involved hiring, training, dispatching and firing of the tug crews as necessary; scheduling the work for the boats around customer demands, tides and weather; and finally, preparing the payrolls and invoicing for others to finalize. The second area was the corporation industrial wire rope, and related hardware, purchases manufacturing, sales, delivery and invoicing. These two fields require tenacity, leadership, detail knowledge, and managerial skills. To accomplish the specific tasks, remain profitable, be aware of shareholder-hire preference and maintain a safe work environment demands long hours, patience and ambition.
Specific experience was gained with the 1989 oil spill in Prince William Sound, purchasing a crew boat, several tugs, a fuel barge from Hawaii, plus leasing a variety of equipment.
In November/December 1990, the U. S. Coast Guard invited me to participate in Oil Spill Disaster Plan Preparation in Yorktown, Vg. and Juneau.
Supervisor: Mr. Derry Howard, CEO, West Coast Stevedoring, Juneau

March 1983-December 1986
General Manager of Saxman Seaport, a municipally owned enterprise. In this 3 year period, the average monthly income was increased by 250% while the operating expenses were significantly reduced. The 1983 profit was the first profit made by the facility in 18 years. A sound working knowledge of governmental budget process was refined and an ability to communicate, verbally and in writing was frequently tested. The owners, the City of Saxman, are over 90% Natives so an understanding of a minority's values (as they relate to ownership and operation) was acquired. Specific examples of responsibilities included: all personnel functions; negotiating short and long term leases; working with a variety of local, state and federal agencies to resolve problems of the present and of 20 years' standing; and responsibilities of day to day supervision from design to bid process to construction of five capital improvement projects.
Supervisor: None. Worked directly for the Mayor and Saxman City Council.

May 1980-Feb.1983
Terminal Manager of the Ketchikan Ferry Terminal. During this short period many positive changes in employee attitude and physical appearance of the building were accomplished. Also, the terminal operations were vastly improved to the betterment of the traveling public, the customers and the employees.

May 1977-May 1980
Personnel Assistant in charge of the Ketchikan personnel office for the Alaska Marine Highway.

Nov. 1974-May 1977
Terminal Assistant and Assistant Manager of the Ketchikan Ferry Terminal

April 1974-October 1974:
Owner and sole operator of Bob Watt Agencies.
Contracted with two cruise ship companies to provide line-handlers in all southeast Alaska ports. Required hiring from various union halls, knowledge of the respective contracts and an ability to negotiate, resolve disputes and generally foster a good working relationship with the employees.

Sept. 1970-March 1974
Office Manager and Manager of Agency Services for Southeast Stevedoring Corp. of Ketchikan.
Responsible for the details of arranging for cruise ship requirements through out southeastern Alaska, as well as responsible for the majority of specialty cargo vessels into Haines, Skagway, and Castle Island. An intimate knowledge of union contracts, pilot rate structure, tug tariffs and other related cost factors was necessary in order to fulfill the function of minimizing port call costs. As Office Manager the responsibility was primarily in supervising the preparation of monthly and quarterly reports as required by law and contract.
Supervisor: Mr. Cliff Taro, Pres. , Southeast Stevvedoring Corp.

May 1966-Sept. 1970
Various positions with Westours, Inc. of Seattle in their Alaskan field operations. These were summer jobs while attending university and varied

from driving local sightseeing busses in Anchorage to driving cross-country busses from Seattle to Whitehorse, Fairbanks, Anchorage, Haines, etc. to being District Manager and Hotel Manager in Skagway, Alaska. Last position held was Manager of the Klondike Hotel in Skagway and agent for their cruise ships at that port.
Supervisor: Mr. Ken Friske (no longer with company). For reference, please contact Jack Musiel or Chuck West, previous president of Westours, now president of TravAlaska Tours.

PERSONAL BACKGROUND

Born in England. Immigrated with parents to Canada in 1948 and grew up in Victoria, B.C. Arrived in Alaska permanently in 1966, and lived in Anchorage and Skagway prior to moving to Ketchikan in 1970. Became a U.S. citizen in 1973.

Interests are in Alaskan history and renovating old buildings. In 1975 restored "Dolly's House" on Creek Street in Ketchikan and created a private museum which is still in operation.

COMMUNITY SERVICE AND ELECTED POSITIONS

Served 6 years on the Ketchikan Gateway Borough Assembly (1975-1981)
Past President of the Ketchikan Visitors Bureau (1976)
Received the Rainbird Award for Outstanding Volunteer from Ketchikan Visitors Bureau - 1981
Vice Mayor of Ketchikan Gateway Borough 1980-1981
Past President of Herring Bay Water Users Assoc.
Past Chairman of Board, South Tongass Volunteer Fire Dept.
Past Board Member of Southeast Alaska Health Systems Agency
Soccer League coach, Jr. League - 2 yrs.
Past Board Member, Mt. Point Water Service District
Past Board Member, Ketchikan Rotary Club
Individual Member, Ketchikan Chamber of Commerce
Past President, Ketchikan Republican Club - 2 yrs.

M E M O R A N D U M

TO: Alaska Board of Marine Pilots
VIA FAX 465-2974

FROM: Alaska Marine Pilots

RE: Proposed Regulations 12 AAC 56.021(b) and (c)

DATE: April 10, 1992

This memorandum presents the view of Alaska Marine Pilots ("AMP") respecting proposed regulations 12 AAC 56.021(b) and (c).

SUMMARY

Proposed regulation .021(b) is a redraft of the existing language. After it was put out for public comment and thereafter adopted by the Board at its January 1992 meeting, this subsection was redrafted by the Office of the Attorney General ("AG"). According to Mr. Amendola, the redrafting was not supposed to change the regulation in any substantive way. However, without questioning the AG's intent, AMP contends that the change is substantive and substantial. AMP asks the Board either to adopt the subsection in its original form or put it out for public comment again.

Proposed regulation .021(c) was first adopted by the Board at its Fall 1991 meeting, put out for public comment, and adopted unchanged at the Board's January 1992 meeting. The AG has indicated it will recommend to the lieutenant governor that the regulation as written is contrary to law and therefore unenforceable, and consequently should not be approved by the lieutenant governor. AMP strongly urges the Board not to change this subsection, and by this memorandum urges the AG to reconsider its position and approve the subsection as written.

SUBSECTION .021(b)

As originally adopted, .012(b) read: "Each exemption, addition, or endorsement to a marine pilot license must be identified on the license." As rewritten by the AG's office, it reads:

> (b) An exemption to a license for a pilotage region will be identified on the license for the parts of the region that the licensee is determined by the board as not qualified to pilot or the pilot does not seek licensure. An endorsement for an extended route will be identified on the license if the board issues an endorsement under this chapter.

The words "or the pilot does not seek licensure" is a significant substantive change in the regulation as adopted by the Board. AMP can see no justification in the statute or any regulation adopted by the Board for adding these words to the regulation.

The reason this is significant is that implies that pilots may make an election not to seek licensure in all of a region. AMP strongly urges the Board to adopt a policy that a pilot must have full federal and state pilotage in order to obtain an unlimited pilot's license under AS 08.62.100. There is no doubt that the Board has the authority to impose this requirement.

(AMP is aware that the statute no longer refers to anything called an "unlimited license." However, for the sake of discussion, AMP refers to the license contemplated by AS 08.62.100 as an "unlimited" license, distinguished from the deputy marine pilot license contemplated by AS 08.62.097.)

Furthermore, AMP urges the Board to impose a requirement that deputy marine pilots holding less than full state and federal licensure for a region make reasonable progress toward full licensure. In other words, the requirement should be that a deputy marine pilot will obtain the unlimited license within a reasonable time, or lose his deputy license.

The policy objective here is to ensure that each pilot eventually becomes fully licensed in his or her region, and therefore is able to provide pilotage services to all vessels in all ports of the region, at all times of the year, day or

night. The state's interests are not served by permitting a pilot to become licensed in one or two high-volume, high-profit ports in a region, to the exclusion of the other lower-volume, lower-profit ports. If the state permits that kind of "cherry picking," pilots and pilot groups will have a strong economic incentive to work and compete only in the profitable ports. In fact, it will become an economic imperative to do so. It will become economically impossible to provide service to remote, unprofitable ports and still stay in business.

For this reason, the words "or the pilot does not seek licensure" should not be included in the regulation. Clearly, this phrase represents a significate substantive change from the regulation that was put out for public comment and then adopted by the Board in January. The Board must either insist that the regulation be written as originally adopted, or must put this new version out for full public comment. In AMP's view, the Board cannot legally adopt this substantive change without going through the entire process.

SUBSECTION .021(c)

This is what has become known as the "cross-regionalization" issue. Some pilots and industry representatives are strenuously urging the Board to adopt a regulation that will permit pilots to cross regional lines freely. AMP strongly urges the Board to resist this pressure, and to maintain the tough regional restrictions contemplated by the legislature in HB 194.

The current language of 12 AAC 56.012(c) was suggested by AMP and thereafter adopted by the Board at its Fall 1991 meeting. It was put out for public comment, then adopted unchanged at the Board's January 1992 meeting:

> (c) A pilot may not be licensed in more than one region at a time unless the board determines that the members of the organization or organizations of that region do not have a sufficient number of qualified members to provide the kind of pilotage in the region that will assure the protection of shipping, the safety of human life and property, and the protection of the marine environment.

The need for this regulation arises from AS 08.62.080(b), which provides:

> A pilot may not be licensed in more than one pilotage region at one time, unless the board determines that it is in the best interests of the state to license pilots for parts of more than one pilotage region.

The regulation proposed by AMP and adopted by the Board was intended to define what constitutes "the best interests of the state."

The AG has indicated it will disapprove this section if the Board does not withdraw it. The AG's reasons are set out in a memo of March 20 from Mr. Amendola to Assistant AG Deborah E. Behr, and a subsequent memo dated March 20 from Ms. Behr to the Board. The bottom line is that the AG views this language as "anti-competitive" and therefore prohibited by AS 08.62.040(d). Subsection .040(d) provides that the Board may not adopt a regulation "resulting in anti-competitive practices that, if the board were subject to AS 45.50.562--45.50.596, would violate AS 45.50.562--45.50.596."

AMP respectfully contends that the AG is wrong in its determination that the current language of 12 AAC 56.021(c) is anti-competitive. AMP's threshold problem with the AG's position is that there is no discussion whatsoever in their legal memoranda to the Board explaining why the language would violate AS 45.50.562 -- .596. We can find no indication that the current language <u>does</u> violate any anti-trust provision of Alaska law. Without any discussion by the AG in its memoranda, it is impossible to determine where the violation might lie.

In AMP's opinion, the AG's memos gloss over the express language of AS 08.62.080(b). As written, the statutory presumption is that pilots shall not pilot in more than one region at a time UNLESS an exception must be made to serve the state's best interests. In other words, the presumption is in favor of the restriction, not in favor of the exception. The AG seems to be reading it the other way around: Mr. Amendola and Ms. Behr seem to be arguing that pilots should be able to pilot in more than one region at a time UNLESS they cannot demonstrate an ability to do so safely. This improperly reverses the language of the statute.

There is nothing in the regulation or the underlying statute that prevents a pilot from competing in any region in which he chooses to compete. However, it is undeniable that AS

08.62.080(b) creates a heavy presumption against allowing them to compete in two or more regions at the same time. The legislature obviously balanced the state's interest in unfettered competition against its interest in promoting local expertise. It enacted Section .080(b), together with mechanism for creating smaller pilotage regions, for the purpose of making sure that pilots do not spread themselves too thin. This is a safety-promotion measure well within the legislature's police powers.

The existing language of 12 AAC 56.021(c) is not "anti-competitive" except in the most literal sense -- that is, in the sense that the entire statute is "anti-competitive" because it does not permit unfettered and unregulated marine piloting. In that sense, the entire statutory scheme is "anti-competitive": no one can pilot without a license, and that very fact means that piloting is not purely competitive. Under the current scheme, a pilot is also restricted in where he can work, with whom he can work, and how much he can charge. It follows that the mere regulation of pilots cannot be construed as inherently "anti-competitive." If it were, the entire statute would have to be thrown out. In the context of AS 08.62.040(d), the term "anti-competitive" has to mean something more than "regulated" or "restricted."

AMP remains convinced that the regulation must define what constitutes the <u>state's</u> interest in deciding whether a pilot can pilot in more than one region at a time. It is not the interests of pilots or of industry that are to be considered, but the interests of the <u>state</u> alone. What are the state's interests? The statute spells it out at AS 08.62.040(a): safe and efficient pilotage service to assure the protection of shipping, the safety of human life and property, and the protection of the marine environment. These are the state's <u>only</u> interests in piloting, and the entire statutory and regulatory scheme is aimed at furthering these specific enumerated interests.

As long as these specific state interests are being adequately served by the pilots who are already working exclusively in a region, then Subsection .080(b) makes it clear that there is no justification for permitting a pilot from another region to work in both regions at the same time.

Put another way, as long as the state's interests are being adequately served in a region by the pilots working exclusively in that region, then Subsection .080(b) expresses the state's overriding interest in preventing pilots from other

regions from diluting their expertise by trying to work in two regions simultaneously.

Put yet another way, as long as the state's interests are being adequately served in a region by the pilots working exclusively in that region, then permitting pilots from other regions to work in that region serves only their own economic interests and the economic interests of industry, to the detriment of the state's interest in promoting safety by restricting pilots to one region at a time.

With all that in mind, we must disagree with the AG's office in its suggestion that the state's interest in this matter is only to make sure that pilots pass some tests and maintain their currency. Quoting from Ms. Behr's March 20 memo:

> The board may consider adopting more frequent examinations, enhanced continuing education requirements, or local experience requirements for pilots licensed in two or more regions.

If that were the legislature's intent, they never would have enacted Subsection .080(b). What the AG's office proposes is no change from the prior statutory and regulatory scheme, which placed no limitation on where a pilot could work, so long as he passed the proper tests. A basic rule of statutory construction is that the legislature is never presumed to have enacted a law without a reason. If the effect of a new law is to change existing law, it must be presumed that the change was intended.

In this case, the prior law consisted of a statute that did not even mention pilotage regions, and a regulation (existing 12 AAC 56.021(a)) that divided the state into two "licensing areas." There was no restriction on any pilot who wanted to work in both "licensing areas" as long as he passed the tests required by the board.

Contrast the old statute with the new legislation. The new legislation included a statement of policy setting forth a legislative finding that

> in order to assure the protection of lives and property and the marine environment of the state, licensed marine pilots <u>having extensive local knowledge</u> are required to pilot certain vessels on the inland and coastal waters of and adjacent to the state.

HB 194, Sec. 1(b)(1) (emphasis added). Without doubt, the legislature was interested in encouraging "extensive local knowledge." The statement of policy goes on to say that the legislature found that

> it is necessary to give the Board of Marine Pilots broad statutory authority, including the authority to establish pilotage regions . . . .

HB 194, Sec. 1(b)(5). The statute itself directs the Board to adopt regulations establishing pilotage regions, and provides that the Board may adopt regulations establishing standards for permitting a pilot to work in more than one region at a time. AS 08.62.040(a)(4)(A) and .040(b)(4). Finally, the new legislation establishes a strong presumption against allowing pilots to work in more than one region at a time. AS 8.62.080(b).

These are substantial changes from the law as it existed prior to the passage of HB 194. The Board and the AG must look at the presumption against "cross-regionalization" as a significant change in the law that was intended by the legislature.

In adopting the current language, AMP believes that the Board has properly exercised the broad authority conferred upon it by the legislature. AMP questions the authority of the AG's office to interfere in this exercise of authority, where the legislature clearly intended that the collective expertise of the Board was to be given great weight. On what is essentially a safety issue, the AG appears to have substituted its determination of what constitutes the state's best interests for that of the Board.

From AMP's perspective, the real issue here is defining what is meant in Subsection .080(b) by "the best interests of the state." We remain convinced that the board must look to the rest of the statute to define those interests, and as mentioned above, the statute defines those interests in terms of protection of shipping, of human life and property, and of the marine environment. If one reads Subsection .080(b) as raising a strong presumption against "cross-regionalization" (and AMP insists it must be read that way), then it necessarily follows that cross-regionalization will not be allowed so long as the pilots already working exclusively in a region are meeting those interests.

In discussing how best to serve the state's interests in marine piloting, the Board cannot lose sight of economic realities. Alaska will only have a corps of experienced professional marine pilots if pilots have reasonable assurance of job security and of compensation comparable to others in their profession. This is every bit as much of a safety issue as drawing charts and passing tests. Alaska cannot afford regulatory policies that drive the best marine pilots to other areas of the country or out of the profession altogether.

If the board permits multi-regional licensing in the name of competition (rather than in the name of safety), the overall quality of piloting will suffer in several ways. Pilots who are stretching themselves to work in two regions at a time will experience dilution of their local knowledge and expertise. Unrestricted competition will result in cherry-picking, with the accompanying loss of coverage in unprofitable outports. Eventually, the best and most experienced pilots will go elsewhere rather than bear the risks of inadequate compensation and uncertain employment security.

The AG's proposal would permit granting licenses for more than one region <u>without</u> any finding by the Board that the state's interest is being served by doing so. In effect, the AG's proposal would eviscerate AS 8.62.080(b) by substituting a scheme allowing pilots to get licensed in more than one region at a time <u>without an independent determination by the Board that the state's best interests compelled it</u>. As noted above, that is no change from prior law.

In order to satisfy the mandate of AS 08.62.080(b), every applicant for a license to pilot in all or part of a second region should be required to demonstrate to the Board that the state's best interests will be served thereby. That determination cannot be made by a blanket licensing scheme, but must be made on a case-by-case basis considering all the circumstances, and must be made solely on the basis of the <u>state's</u> interest in safe piloting, not the economic interests of the individual pilot or industry. The current language of .021(c) provides a yardstick for this determination that is itself grounded in the statute.

The AG's suggestion ignores another issue -- perhaps the central issue -- that has been brought to the Board's attention, but which the Board has so far been unwilling or unable to face head-on. It is the issue of "cherry picking," and it arises in these two related areas: whether pilots can pilot in more than one region at a time, and whether the board

should recognized pilot organizations that cannot serve all or substantially all of a region.

The problem of "cherry picking" is this: In a region, the revenue from piloting in the high-volume ports essentially subsidizes the low-volume remote ports. For instance, in the Western Region, AMP can only service outports such as Chignik, Lost Harbor, Cold Bay, and the Aleutians at reasonable rates because of the revenues generated by the high volume of traffic in ports like Dutch Harbor. If an individual pilot or a small pilot group is permitted to skim off the cream by working exclusively in Dutch Harbor and offering to do the piloting work there for less, then AMP will inevitably be forced either to abandon the outports and compete head-to-head in Dutch Harbor, or compete head-to-head in Dutch Harbor and raise the rates for the outports to a prohibitive level.

The state's interests are very much at stake in this matter, because if individual pilots or small pilot groups are allowed to "cherry pick" in the name of promoting competition, then larger pilot groups that are trying in good faith to serve an entire region will not be able to continue doing so. Why would any pilot or pilot group continue to serve the unprofitable outports if the only way to survive is to restrict themselves to competing in the high-money ports or trades? Clearly, the state's interests are not served if service to the outports either disappears or becomes prohibitively expensive.

In trying to promote competition, the central flaw in the AG's reasoning is that marine piloting is a free-market enterprise. That is incorrect. Marine piloting, and the state's interest in marine piloting, is more like a public utility or the post office: the public interest demands that piloting, like postal service, be maintained even in remote, low-volume areas where it is not profitable or even self-sustaining. In the interests of safety, the state should be doing everything it can to ensure that regional pilot groups will continue to serve the outports, even though they are not profitable. The state should NOT be doing anything to force pilots to abandon the outports.

The fact is that marine piloting <u>is</u> carefully regulated in the public interest. Unlike lawyers, doctors, hairdressers, and real estate agents, all of whom are also licensed by the state, marine pilots cannot decide unilaterally where they will work, and with whom, and for how much. Instead, the state has decided to restrict them to certain regions of the state, to regulate how much they can charge, and to require that they

become members of regional pilot organizations that must accept for membership anycne with a pilot's license. The AG's apparent assumption that marine piloting should be treated like a truly "competitive" profession is simply indefensible.

In order for the state's interests to be properly served, the state must ensure that professional pilots organizations that are making a good faith effort to provide full coverage to the entire region are NOT driven out of business. The members of these organizations MUST be permitted to make a reasonable living at least equal to professional pilots in the rest of the country, and they must have reasonable job security. The state's interests in having a solid corp of competent professional marine pilots with sound local knowledge is not furthered by encouraging a system under which remote locations cannot get pilots, good pilots are driven elsewhere for decent pay and job security, and piloting services in the busiest ports go to the lowest bidder in a cutthroat market. It is neither good nor responsible public policy. We aren't talking about cabbages here; we're talking about marine safety. Marine pilots are the equivalents of air traffic controllers, not grocers.

RECOGNITION OF MARINE PILOT ORGANIZATIONS

AMP supports the following policies for recognition of marine pilot organizations and the training and licensing of pilots:

1. In order to receive an unlimited license, a pilot must have full federal and state coverage for the entire region. AMP believes there should be a reasonable time in which to move from partial coverage as a deputy pilot to full coverage as an unlimited pilot, but also believe that a time limit must be established for doing that. In other words, "up or out." This would affect regulation .021(b), which implies that a pilot can elect indefinitely not to get fully licensed in the region. As noted above, AMP urges the Board to go back to the original formulation of .021(b).

2. In order to be recognized as a regional organization, a one-pilot organization must agree to provide pilotage services in the region for at least six months of the year. An organization with two or more members must provide pilotage services for the entire year.

3. No pilot organization, regardless of its size, may refuse a request for pilot services anywhere in the region, unless there is no competent pilot then available from the organization. In other words, if a competent pilot is available, that pilot must render requested services. "Competent" means physically and mentally competent and licensed for the particular area. An organization's refusal to perform pilotage services when competent to render them should be grounds for terminating the organization's recognition.

These measures are intended to preclude seasonal and geographic cherry-picking, and AMP believes they are reasonable requirements in furthering the statutory objectives of the act.

Respectfully submitted,

ALASKA MARINE PILOTS

cc: Gary Amendola
Office of the Attorney General
State of Alaska
(via fax)