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National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

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In reply refer to: A-95-121 through -136

Honorable David R. Hinson
Administrator
Federal Aviation Administration
Washington, D.C. 20591

The National Transportation Safety Board has had a longstanding interest concerning aviation safety in Alaska. One segment of Alaska aviation, the air taxi industry, was the subject of a special study published in September 1980.[1] The Safety Board concluded in the study that three factors contributed most to the high air taxi accident rates in Alaska: (1) the "bush syndrome," defined as an attitude of air taxi operators, pilots, and passengers ranging from their casual acceptance of risks to their willingness to take unwarranted risks; (2) inadequate airfield facilities and inadequate communications of airfield conditions; and (3) inadequate weather observations, inadequate communications of the weather information, and insufficient navigation aids.

As a result of the air taxi study, the Safety Board issued safety recommendations to the Federal Aviation Administration (FAA), the State of Alaska, and the Alaska Air Carriers Association (AACA) concerning the planning and development of Alaska's aviation system and infrastructure; weather observation and dissemination of weather information; and regulatory surveillance and operator safety oversight. Actions taken by the recipients in response to the recommendations combined with other safety developments during the 15 years since the Board's 1980 study have brought many improvements to aviation safety in Alaska. Despite the improvements, however, the Safety Board's investigations of aviation accidents in Alaska indicate that the safety issues identified in the 1980 study remain areas of concern.

Flight operations in Alaska are diverse, and they are responsive to the State's challenging aviation environment and its unique air transportation requirements. Some characteristics of Alaska, such as rough terrain, adverse weather, and extreme isolation, increase the risks to safe flight operations. The risks associated with these characteristics can be managed, to varying degrees, by the operating practices of pilots and companies, and by the infrastructure of airports,

[1] National Transportation Safety Board. 1980. Air taxi safety in Alaska. Special Study NTSB-AAS-80-3. Washington, DC.

navigational aids, air traffic control facilities, and weather facilities. The potential for managing the risks associated with aviation in Alaska is particularly high now, because of developments in navigation and communications technologies. The Safety Board conducted its recent study[2] to examine Alaska's current aviation environment and air transportation activities, to identify the associated risk factors and safety deficiencies, and to recommend practical measures for managing the risks to safe flight operations given the reality of Alaska's aviation environment and the potential of new technologies.

Despite the need to cope with Alaska's difficult operating environment, aviation operations of all types in the State are extremely safe. Overall, commuter airlines, air taxis, and general aviation operations in Alaska operated nearly 13 million flight hours from 1989 through 1994 and experienced 1,566 accidents, 193 of which resulted in fatalities.[3] The Safety Board recognizes the high level of safety achieved by Alaska's operators in recent years; nevertheless, the Board's examination of the accident rates experienced by some types of operators in the State led the Board to consider ways to further improve the safety of their flights.

The Safety Board's review of commuter airline, air taxi, and general aviation accidents in Alaska highlighted two accident types of major consequence: (1) accidents during takeoff and landing, and (2) accidents related to visual flight into instrument meteorological conditions (IMC). Of the 172 commercial and private aviation accidents that occurred in Alaska during 1993, these two types accounted for 131 (76 percent). Of the 21 accidents that resulted in fatalities, the two types accounted for 9 (43 percent). Although takeoff and landing accidents are relatively frequent in Alaska, few of them result in fatalities; accidents related to visual flight into IMC are less frequent, but they account for a large share of the fatal accidents among commuter airline and air taxi operations in Alaska.

Airport Facilities

The Safety Board evaluated airport facilities in Alaska because of the large number of accidents that occur during takeoff and landing. The FAA inspects all airports certificated under 14 CFR Part 139 (those airports served by air carrier aircraft larger than 30 passenger seats) to ensure that these facilities meet Part 139 standards. Further, the FAA requires inspection of all public use airports not certificated under Part 139, either by FAA personnel or by designees. These inspections are the FAA's primary means of gathering airport information that is critical to flight safety (such as the functionality of lighting systems and the condition of runway surfaces) and then disseminating that information to pilots through airport information publications.

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[2] National Transportation Safety Board. 1995. Aviation safety in Alaska. Safety Study NTSB/SS-95/03. Washington, DC.

[3] Accident rates of the air carriers operating under Title 14 Code of Federal Regulations (14 CFR) Part 121 in Alaska have been comparable with those of Part 121 operators in the remainder of the United States, between 1986 and 1994. Consequently, the study focused on operations conducted under Part 135 (commuter airlines and air taxis) and Part 91 (general aviation).

The 29 fully certificated, civilian airports in Alaska are inspected annually, as required under Part 139, by the FAA Alaskan Region Airports Division, Safety and Standards Branch. Two full-time certification inspectors are assigned responsibility for these airports; in addition, they are responsible for inspecting once every 2 years the seven civilian airports holding limited certification.

The additional 372 public use airports (excluding military airports) in the State fall under the FAA's 5010 program. FAA Order 5010.4 establishes that public use airports shall be inspected by FAA, State, or contractor personnel. Most of these inspections in States other than Alaska are conducted by contract personnel with oversight by the National Association of State Aviation Officials (NASAO) and the FAA. In Alaska, neither the NASAO nor the State supervises or assists in these inspections; consequently, FAA personnel from the Airports Safety and Standards Branch are required to conduct all airport inspections in the State.

Historically, the branch was staffed with an individual who was responsible for the 5010 program. As of mid-1995, that position had been unfilled for more than 2 years. During that period, the two airport certification inspectors responsible for inspecting Part 139 airports were assigned the 372 airports in the 5010 program as an ancillary duty. Further, in autumn 1995, the manager of the branch, who also conducted inspections, was reassigned, and one of the two airport certification inspectors retired. Thus, in 1995, staffing of the FAA department responsible for all airport inspections in Alaska was reduced to one person.

The Safety Board is unable to identify a direct connection between previous aviation accidents in Alaska and the frequency or quality of FAA airport inspections. However, during the Board's public forums,[4] operators expressed a concern that the accuracy of airport information publications, including the *Alaska Supplement*, is dependent on these inspections. As a result, the Board is concerned about the recent reductions in airport inspection staffing. The current staffing level combined with the lack of participation by the State of Alaska will adversely affect the 5010 program until corrective measures are taken. To ensure that airport information critical to flying safety can be obtained, the Safety Board believes that by December 31, 1996, the FAA should complete an evaluation of the work program for inspectors responsible for the Part 139 and 5010 airport inspection programs within the Alaskan Region, then develop appropriate staffing standards and personnel work responsibilities based on the evaluation and encourage the State of Alaska to participate in the 5010 program. Further, the Board believes that the State should develop a program to participate in the FAA's 5010 airport inspection program.

[4] As part of its study, the Safety Board held public forums on aviation safety in Alaska in Juneau on May 22, 1995, and in Anchorage on May 24 and 25, 1995.

Airport Condition Reporting

Many accidents that occurred during landings at small airports may have been averted had pilots been provided timely reports of airport and runway conditions. At most of the State-owned rural village airports in Alaska, the State contracts with private individuals for airport maintenance, who observe runway conditions during the performance of their duties. Observations from these sources could be useful to pilots; however, the representative of the State of Alaska Department of Transportation and Public Facilities at the Safety Board's public forum expressed reluctance to allow maintenance contractors to issue runway condition reports for arriving/departing aircraft because the contractual personnel have limited qualifications and because of potential problems of liability. Further, the State representative expressed concern about the effectiveness of communication by equipment operators (such as a grader or snow plow operator) within the noisy operating environment of the equipment.[5] The State representative also reflected the positive aspects of direct communications between pilots and airport maintenance personnel, stating, "We feel it is extremely dangerous...when we no longer have any effective communication on a particular airport...when we're in an operation where we're cleaning snow off and...we don't have any means of having some communication to that pilot that we're on the airport."[6]

At most of the village airports in Alaska, the local State airport maintenance contractors are the only persons on site who are capable of providing direct, near real-time ("mike-in-hand") reports of airport conditions to the pilots of aircraft in flight. Such personnel, given appropriate training and procedures to follow, could provide valuable information to arriving pilots. The Safety Board recognizes the concerns of the State and other potential mike-in-hand information providers (such as the National Weather Service) pertaining to liability exposure; however, in the Board's opinion, these concerns can be addressed by the proper training of personnel, particularly training in the skills of observing and reporting factual information straightforwardly. The Safety Board believes that by December 31, 1996, the State of Alaska, with the assistance of the FAA, should develop appropriate procedures and establish a training program to enable mike-in-hand reports of airport conditions by designated State and contractual airport maintenance personnel.

The Notice to Airmen (NOTAM) system operated by the FAA's flight service facilities currently relates to pilots information that is gathered by official sources; for example, FAA officials and airport managers. Pilots responding to the Safety Board's survey[7] indicated that their preflight planning and safety of flight operations would be enhanced if NOTAMs included

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[5] Transcript of proceedings before the National Transportation Safety Board, in the matter of: Forum on aviation safety in Alaska, May 24, 1995, Anchorage, Alaska, p. 919.

[6] Transcript of proceedings, p. 916.

[7] Between March and August 1995, the Safety Board obtained information about aviation operations through structured, on-site interviews of 50 pilots and managers of commercial operations (commuter airlines and air taxis) in Alaska. Also during the site visits, Safety Board staff specialists in air traffic control, weather, and airports obtained information about Alaska's aviation infrastructure through interviews with personnel employed in those areas.

unofficial information about airport conditions gathered by designated persons (other pilots, airport maintenance personnel, air operator personnel, and local observers). Some respondents further suggested that the NOTAM system should be modified to include information from designated persons about field conditions at off-airport areas in Alaska that are frequently used by operators for takeoffs and landings. The Safety Board believes that the FAA should modify the NOTAM system in Alaska to accept and disseminate unverified information, labeled as such, about airport and off-airport field conditions that is provided by designated aviation and nonaviation sources.

Factors Affecting the Safety of VFR Operations in Alaska

Information obtained through the Safety Board's public forums, survey of pilots and managers, interviews with aviation personnel, and accident investigations highlighted several factors affecting the safety of operations conducted under visual flight rules (VFR) in Alaska: risk-taking behavior of pilots and operators; operational pressures; pilot decisionmaking; management attitudes; FAA safety programs; flight/duty time limitations; navigational aids; and weather information. The Safety Board examined these factors to identify methods for enhancing the safety of current VFR operations, particularly methods for reducing the occurrence of accidents related to VFR flight into IMC. Improvements made in these areas, plus improvements in the reporting of airport and runway conditions previously discussed, would benefit all commercial and general aviation operations performed under VFR in Alaska.

Pilot Decisionmaking.—VFR flight into IMC usually involves poor pilot decisionmaking, whether in initiating the flight or continuing it into adverse weather. The FAA has developed and is now proposing to require the use of an innovative program on aeronautical decisionmaking (ADM).[8] The ADM program is designed to assist pilots in identifying specific hazardous thought patterns they may be employing in decisionmaking, and it provides positive thought patterns for substitution. Program materials include situational narratives for pilots to use in habituating themselves to the safe responses to hazardous thought patterns. The ADM program enhances the potential for effective pilot training in judgment and decisionmaking.

As a result of the April 4, 1991, midair collision between a Piper Aerostar air taxi flight and a Bell 412 helicopter over Merion, Pennsylvania, the Safety Board recommended that the FAA disseminate more aggressively the available information and materials pertaining to ADM training and actively promote its implementation among all categories of pilots in the civil aviation community (Safety Recommendation A-91-93). The FAA replied on December 27, 1991, that 2 weeks earlier it had issued Advisory Circular 60-22, "Aeronautical Decision Making." Additionally, the FAA stated that ADM information and materials were being actively disseminated through its "Back to Basics" program, an element of the nationwide FAA aviation safety program in which pilots could participate at their option. On May 8, 1992, the Safety Board classified Safety Recommendation A-91-93 "Closed—Acceptable Action." In closing this

[8] A description of the ADM program is contained in FAA Advisory Circular 60-22.

safety recommendation, the Board also asked the FAA to consider including ADM information in air carrier training programs and other recurrent pilot training and checking activities.

As a result of the April 22, 1992, collision with terrain of a Beech E18S airplane conducting a commercial air tour flight on Maui, Hawaii, the Safety Board recommended that the FAA issue an air carrier operations bulletin instructing all FAA principal operations inspectors to aggressively encourage all commercial operators to incorporate comprehensive ADM training in their pilot training programs (Safety Recommendation A-93-13). The FAA responded on April 29, 1993, that it would issue a bulletin to emphasize to its field office inspectors the importance of encouraging operators to incorporate ADM in their company training programs. Based on this response, the Board classified Safety Recommendation A-93-13 "Closed—Acceptable Action." During its recent study on aviation safety in Alaska, the Safety Board learned that the ADM bulletin has not been issued; the FAA has informally told the Board that the bulletin will be issued in the near future.

On August 11, 1995, the FAA issued Notice of Proposed Rulemaking 95-11, which proposes integrating human factors and aeronautical decisionmaking (ADM)/judgment training as requirements for all pilot certificate levels. The proposal does not, however, require the integration of ADM and judgment training into the initial and recurrent training programs of Part 135 commercial operators. The continued occurrence of accidents related to VFR flight into IMC in the commuter airline and air taxi industries in Alaska suggests that such training should be incorporated into operator training programs. Accordingly, the Safety Board believes the FAA should require, by December 31, 1997, operators that conduct scheduled and nonscheduled services under Part 135 in Alaska to provide flightcrews, during initial and recurrent training programs, aeronautical decisionmaking and judgment training that is tailored to the company's flight operations and Alaska's aviation environment. Further, the FAA should provide similar training for FAA principal operations inspectors assigned to commuter airlines and air taxis in Alaska so as to facilitate the inspectors' approval and surveillance of the operators' training programs.

FAA Safety Programs.—The FAA Alaskan Region has a safety promotion program that combines elements of the national Aviation Safety Program with unique elements developed locally in Alaska. This program has the potential to help pilots and managers cope with the pressures of their flying environment and develop corporate attitudes that promote safety.

In the 1980's, the FAA established an Aviation Safety Program and assigned an Aviation Safety Program Manager (APM) to each of the three Flight Standards District Offices (FSDOs) in Alaska. The APMs are responsible for developing safety initiatives aimed at accident prevention, as well as volunteer and industry support for safety programs. The national policy is for each FSDO to have one APM regardless of the geographic area of responsibility or the number of pilots in the area. The policy, however, has caused workload disparities in Alaska. The Anchorage FSDO has 198 Part 135 air carriers, 7,060 pilots, and 1 APM; the Juneau FSDO also has 1 APM but only 38 Part 135 air carriers and 789 pilots. Currently, there are no national workload-based guidelines for establishing APM staffing levels. The Safety Board believes that the FAA should evaluate the APM work program and the associated Aviation Safety

Program in the Alaskan Region, and develop appropriate national workload-based standards for staffing based on the evaluation.

In 1993, the FAA, in cooperation with the Alaskan Aviation Safety Foundation and the AACA, developed a Total Company Resource Management Human Factors Training Program for Part 135 operations. The program comprises six videotapes that examine how human performance contributes to commuter airline and air taxi accidents and incidents. The videos, which are between 5 and 8 minutes long, portray open-ended scenarios that raise safety issues and situations without resolving them. The videos are designed to trigger discussion between management and pilots regarding human factors issues, hence the name "trigger tapes." Several pilots and managers responding to the Safety Board's survey stated that they had received, watched, and used at least one trigger tape. Their comments to the Board were favorable.

About 205 of the 273 air carriers and commercial operators in Alaska had received the trigger tapes as of 1995. The Alaskan Region stated that it will take some time for trained FAA personnel to brief and provide the tapes to the remaining carriers. According to the FAA, it has received limited feedback from the air carriers about the trigger tapes and has not determined how many of the operators that initially received the trigger tapes ever used them, or if they are continuing to use the tapes in their initial and recurrent training programs. The trigger tapes program is an example of an innovative FAA accident prevention effort that appears to be appropriate for commuter airline and air taxi operators, but further action is needed to achieve its potential. The Safety Board believes that by December 31, 1996, the FAA should complete the distribution of trigger tapes to all Part 135 operators in Alaska, disseminate information about this program to the FAA Principal Operations Inspectors assigned to Part 135 operators, and establish a program to evaluate operator use of the tapes.

Pilot Flight, Duty, and Rest Time.—Regulations contained in 14 CFR Part 135.261(b)(1) allow commuter airline operations conducted solely within Alaska to comply with the limitations of 14 CFR Part 135.267 that elsewhere in the United States apply only to nonscheduled (air taxi) operations. The rule allows Alaska commuter and air taxi pilots to accrue a flight time of 500 hours in any calendar quarter, 800 hours in any two consecutive calendar quarters, and 1,400 hours in any calendar year. It permits a scheduled duty period of up to 14 consecutive hours, with a minimum rest period of 10 hours between duty periods. Operators are required to provide pilots with 13 24-hour periods free from duty per calendar quarter. Under the rules, operators could, theoretically, provide 13 duty-free days at the beginning of one calendar quarter, and 13 at the end of the following quarter, thereby scheduling pilots for up to 156 consecutive 14-hour duty days. On March 29, 1995, the FAA issued a Notice of Proposed Rulemaking, "Commuter Operations and General Certification and Operations Requirements,"[9] that would eliminate the special treatment for Alaska and require operators of commuter airline service in Alaska using airplanes with more than 10 passenger seats to adhere to the more restrictive flight and rest time

[9] Federal Register, March 29, 1995, p. 16230-16296.

limitations of 14 CFR Part 121.[10] According to FAA personnel, the agency is also reviewing the flight and rest time rules for pilots involved in all commercial flight operations, including Alaskan commuter airlines and air taxis. The FAA has informed the Safety Board that proposed rulemaking was expected by the end of 1995.

In comments presented at the Safety Board's public forum, the AACA expressed support for special, less restrictive treatment for Alaska's commuter airline industry, contending that commuter airline pilots in Alaska are not subject to the same fatigue factors as pilots in other parts of the country. The AACA representative offered the following reasons in support of its contention: (a) Alaska's commuter airline operators do not use continuous duty overnight schedules; (b) all intra-Alaska commuter operations are conducted within a single time zone; (c) few Alaska pilots commute to their jobs from homes elsewhere in the State; and (d) less than 5 percent of Alaskan commuter operations occur after 9 p.m. The representative commented that the 14-hour duty/10-hour rest cycle, commonly scheduled at present, has the advantage of providing pilots the same 10 hours off duty every day.

In a 1994 survey, researchers from the National Aeronautics and Space Administration asked Alaska commercial pilots to describe aspects of their crew schedule that resulted in flying while fatigued; 85 percent cited the length of their duty day. Of the pilots in the southern half of Alaska, 83 percent said that summer flying resulted in more fatigue because the additional hours of daylight led to long flying hours and an increased number of flights. In the remainder of the State, winter was rated as the worst for fatigue by 75 percent of the pilots. The reasons they cited were the additional hours of darkness and increased workload associated with bad weather.

An air taxi pilot based in southeast Alaska told Safety Board staff during the study that the problem is the combination of long duty days and consecutive days without a day off. He said, "The 5-day week of 14-hour days is too much. We typically do 12 to 14 takeoffs and landings in a 14-hour day. An occasional 14-hour day is okay, by the second 14-hour day you feel fatigued, and by the end of the fifth one, you have noticeably deteriorated alertness." The pilot reported that in the winter, his duty days average 8 to 9 hours, and the pressures are less.

During the Safety Board's public forum, another pilot based in southeast Alaska commented that the 14-hour duty day was detrimental to safety. The pilot stated that some Part 135 air carriers in Alaska were working their pilots 6 and 7 days per week with 14-hour duty days, and that loading, unloading, fueling, changing schedules, and changing weather contributed to pilots becoming too fatigued to make critical decisions.

The information received by the Safety Board indicates that the potential effects of consecutive, long duty days (as currently permitted by Part 135.261 for both commuter airline and air taxi crewmembers in Alaska) in contributing to fatigue should be considered during the FAA's current rulemaking activity that addresses the flight time and duty time limitations of air

[10] Currently, the Part 121.471 domestic air carrier limitations include 30 flight hours per 7-day period, 100 hours per month, 1,000 hours per year, and at least 1 day free from duty per 7-day period.

carrier and commercial operator flight crewmembers. Alaska pilots, in both scheduled and nonscheduled service, are subject to the same physiological constraints as pilots elsewhere in the country. Consequently, the Safety Board believes that the FAA should develop appropriate limitations on consecutive days on duty, and duty hours per duty period for flightcrews engaged in scheduled and nonscheduled commercial flight operations, and apply consistent limitations in Alaska and the remainder of the United States.

Automated Surface Weather Observing Systems.—Air taxi pilots interviewed by the Board in 1980 stated that improvements in weather observations were necessary and that only a system based on human observers would be satisfactory; remote automated weather observing systems were considered inadequate to fulfill the needs of the pilots. Since that time, improvements in remote sensing technology have resulted in the development of automated surface weather observing systems that are capable of observing and reporting basic weather observation elements without manual input. The FAA, National Weather Service (NWS), and Department of Defense (DOD) have committed to these systems, and it appears that most or all future expansions of the number of surface weather observing sites in the United States will utilize automated weather observing systems. Further, the FAA and NWS are implementing a national program to convert most existing sites from manual to automated weather observing.[11]

Most automated observations are generated by two systems: (a) the FAA-sponsored automated weather observing system-3 (AWOS), and (b) the NWS, FAA, and DOD-developed automated surface observing system (ASOS). The AWOS reports cloud/ceiling data, sensor-equivalent visibility, temperature, dew point, wind data, altimeter setting, and density altitude. The ASOS reports these elements plus the present weather/restrictions to visibility, such as precipitation type or fog. Currently, 91 civilian AWOS and ASOS[12] are planned for Alaska.[13]

Acceptance of the automated surface weather observing systems by users in Alaska has been mixed. Some operators and pilots who were interviewed expressed appreciation for the coming expansion of the weather observing network. Others expressed dissatisfactions with the accuracies of the existing (AWOS) units' ceiling and visibility determinations and with the systems' reliability. Another complaint expressed by users about automated surface weather observing systems was the absence of remarks concerning the surrounding weather in these systems' reports submitted to the weather observing network. VFR pilots are concerned about weather along the route of flight, and the remarks of distant weather (beyond the airport boundaries) from the surface weather observations taken by human observers are very useful in filling in the "big picture." Pilots consider information such as cumulonimbus clouds, fog banks, mountain obscuration, lenticular and rotor clouds, and other distant weather phenomena crucial in making sound decisions on whether to initiate or to continue flights under VFR conditions.

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[11] In Alaska, the FAA will continue to conduct manual weather observations at about 20 locations.

[12] An additional 14 military AWOS are operational in Alaska.

[13] FAA Alaskan Region. November 1, 1994. An overview of Alaskan aviation weather system capabilities [Mimeo].

Because current technology does not allow automated systems to replicate all elements of a manual weather observation, such as the presence of a thunderstorm at an airport, Federal agencies have determined that certain additional weather information relevant to the airport should be added at selected automated weather observing sites. This will be accomplished by maintaining trained weather observers at these sites to oversee the automated observations and to augment the weather elements observed by the automated systems.

An FAA weather specialist stated that the agency currently augments AWOS observations at the six locations in Alaska where AWOS operates during hours that qualified weather observers staff the site. Likewise, the NWS plans to augment the ASOS observations at the 13 NWS offices where ASOS has been installed, once the units are commissioned. However, both agencies limit the number and type of weather phenomena that an observer augmenting the AWOS/ASOS can add manually to an automated weather observation.

FAA and NWS national guidelines[14] define information relevant to an airport as weather phenomena occurring within a 5-mile radius of the airport. These guidelines also limit the weather phenomena for manual augmentation of automated weather observations to thunderstorms, tornados, freezing rain, hail, virga (precipitation aloft that evaporates prior to reaching the ground), and volcanic ash. However, according to FAA weather specialists interviewed by the Safety Board, the FAA Alaskan Region currently relies on interim guidelines[15] that allow the weather observer slightly more flexibility in the augmentation process, but do not extend to the full set of operationally significant remarks found in standard manual observations.

NWS specialists interviewed by the Board reported that at designated stations where the NWS has a presence, the agency is planning to report operationally significant aviation information that is not obtained by ASOS by means of a supplementary data observation (SDO).[16] The SDO for an airport is to be included in a separate bulletin rather than attached to the automated observation. Currently, the SDO bulletins are disseminated on internal NWS communications circuits and to some external users, but not to FAA weather briefers or to pilots via the aviation weather data network.

Because automated surface weather observing systems do not provide pilots all of the operationally significant weather information that manual weather observers can provide, it is essential to continue augmenting the automated (AWOS and ASOS) observations with additional information at locations in Alaska where qualified observers are available. Further, the current guidelines defining the number and type of observation elements that may be added to automated

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[14] (a) NWS Observing Handbook No. 7, Surface Observations. (b) FAA Order 7900.5, Surface Weather Observing.

[15] (a) FAA Observer Handbook (Interim), Automated Weather Observing System (AWOS). (b) Notice 7110.97, Interim Operating Procedures for Surface Automated Weather Observing Systems.

[16] The following elements and remarks pertinent to aviation are among those specified to be included in the SDO: ice crystals, ice fog, blowing snow, snow increasing rapidly, sector visibility, significant cloud types such as rotor and altocumulus standing lenticular, and distant clouds obscuring mountains.

weather observations are too restrictive, because they exclude some operationally significant weather phenomena, such as fog banks in the vicinity of an airport. Finally, the dissemination of manually augmented weather information from automated weather observing sites is inadequate because the information is not transmitted within a single weather observation from all automated systems to the aviation weather data network.

The Safety Board believes that at all automated surface weather observing sites in Alaska where currently there are qualified FAA or NWS weather observers (including contract weather observers) on site, the responsible agency should ensure that (1) operationally significant information, including distant weather information, is manually added to automated weather observations until technological progress eliminates the need; and (2) all such information is combined and disseminated in a single aviation weather report.

Video Camera Observations.—Remote black and white video cameras have been used for experiments in weather observations in Alaska with varying amounts of success since the late 1970s. As a result of its 1980 study of air taxi safety in Alaska, the Safety Board recommended that the FAA:

> Continue to develop and improve, in cooperation with the National Weather Service, the technology of the television weather observation system in Alaska. (A-80-104)

The FAA tested a closed circuit video camera during the early 1980s at Unalakleet. According to the FAA, the system was unsuccessful because of the lack of contrast in the terrain. The remote video test program was terminated during 1984 except for a unit at Potato Point. On October 9, 1984, the FAA replied to the Safety Board that difficulties with camera resolution and physical location, exacerbated by local terrain and climatological conditions, resulted in unsatisfactory performance of the video weather observation system. The FAA believed that further installations were unwarranted. Consequently, the Board classified Safety Recommendation A-80-104 "Closed—No Longer Applicable" on January 17, 1985.

Since the test program was terminated, video imaging technology has developed considerably, with better results. The most successful and still ongoing use of video camera technology is at Valdez (Potato Point). Information from the Potato Point images is manually placed in the remarks section of the Cordova hourly weather observation.

The Canadian Atmospheric Environment Service (AES) has successfully used color cameras to provide either supplementary qualitative information for automated weather observation sites or information about specific phenomena, such as fog, at nonairport locations. Calls to the sites where cameras are installed are generally done as needed, although calls may be scheduled. The captured video images are displayed on either a personal computer or a forecaster meteorological workstation. Information from the video images is not attached to weather observations disseminated to pilots, but it is used by forecasters to verify automated observations and to provide supplementary weather information, such as distant weather.

The typical system, consisting of three fixed cameras per site, housing, computers, and installation expenses, costs about $9,000. As of 1995, AES video systems have been installed at about 30 locations across Canada. According to an AES official, 6 additional systems are to be installed in Alberta and Northwest Territories during 1996.

The NWS does not have a national policy concerning the applications of remote video camera technology, and it has no plans to incorporate remote video data into ASOS observations. However, the NWS Western Region has experimented with remote color video cameras at several locations in Utah. The video images have been well-received by Utah weather forecasters and have proven valuable to forecasters in determining precipitation type, visibility, and distant clouds. The NWS Alaska Region expressed its interest in remote video systems and their possible applications in the Alaskan environment. Although the Region has briefly looked at some current technology in cooperation with the regional telephone company, further efforts are hampered because there is no national policy or funding.

Remote color video systems could conceivably be of great benefit in Alaska at selected airports or other locales where, because of terrain features or unique weather phenomena, automated observations are not able to provide the necessary ancillary area weather intelligence. The Safety Board believes that the NWS should evaluate, with the assistance of the FAA, the technical feasibility and aviation safety benefits of remote color video weather observing systems in Alaska.

Communications with Flight Service Facilities.—Pilots communicating by very high frequency (VHF) with flight service facilities throughout Alaska are dependent on remote communications outlets (RCOs). Several pilots who participated in the Safety Board's survey stated that they had experienced inadequate response times by Automated Flight Service Station (AFSS) specialists to radio calls over the RCOs. The problem did not appear to be one of RCO density or location: 41 (87 percent) of 47 respondents stated that the number of existing RCO frequencies was sufficient. However, specialists at AFSS facilities can be responsible for more than 75 different radio frequencies during evening hours when seasonal and part-time Flight Service Station (FSS) facilities are not operating. Consequently, a specialist must often communicate simultaneously with several airplanes on different RCOs, creating a backlog in the system.

The situation was described to the Safety Board by a pilot operating out of Dutch Harbor in the Aleutian Islands. The pilot reported that when Cold Bay FSS closes for the evening, the response from Kenai AFSS over the RCO is not good. A pilot often receives no response to a radio call, or is told to "stand by." In the meantime, the airplane may travel many miles, and the need for weather information may become critical. Other pilots reported that they were placed on standby and were out of radio range when it was their turn to receive service, or specialists would reduce the amount of information contained in a briefing, hurrying to serve the next pilot.

Inadequate response times to pilots may result from what the FAA considers to be a temporary staffing shortage at the AFSSs. In its 1994 report to Congress on the FSS modernization program, the FAA acknowledged AFSS staffing shortages and attributed them to the need to operate the three AFSS facilities in Alaska while continuing to operate much of the

old FSS network. The FAA stated, "This has led to a shortage of staffing and resources that has necessitated emergency FSS closures and part-timings and left AFSSs without a full staff to handle peak activity period."[17] The staffing situation needs to be resolved so that the quality of service provided by the AFSS facilities does not adversely affect safety. The Safety Board believes that, by December 31, 1996, the FAA should ensure that staffing levels and utilization at AFSS facilities in the Alaskan Region are adequate to resolve the reported problems in radio services over RCO frequencies.

Graphical Weather Products for Aviation in Alaska.—The Alaska Aviation Weather Unit, developed through an NWS initiative, is scheduled to be commissioned early in 1996. The unit will add two additional aviation forecasters during each 8-hour shift and will be responsible for the issuance of all area forecasts and in-flight advisories for the State. Equally important, the unit will produce weather graphics specifically tailored for aviation in Alaska and then disseminate them to AFSS and NWS offices. The graphics products will be designed primarily for the FAA personnel who provide weather briefings to pilots. Proposed graphics products include a composite area forecast, 12- and 24-hour aviation significant weather prognosis charts, Alaska surface map, weather depiction chart, radar chart, winds aloft chart, and satellite pictures specially annotated by NWS personnel.

These graphics will represent a major improvement over currently available products and should result in better pilot weather briefings. Further, the safety benefits of these graphic products can be increased through their wide dissemination on graphics-capable media that reach Alaska's pilots. The Safety Board believes that the NWS, with the assistance of the FAA, should provide Alaska-specific graphical weather products on the NWS's aviation weather program telecast nightly on Alaska public television and the Rural Alaska Television Network, on the Direct User Access Terminal System, on the Internet, and on commercial weather information services that use NWS information.

The Need for an Enhanced Low Altitude IFR System in Alaska

The most promising countermeasure to many of the problems of providing safe and reliable commercial air service in Alaska is to reduce the reliance on VFR and conduct more flight operations under instrument flight rules (IFR). A low altitude IFR system appropriate for Alaska's aviation environment would reduce the occurrence of fatal accidents related to VFR flight into IMC and would result in a safer aviation transportation system in Alaska.

Because commuter airlines and air taxis in Alaska need to provide highly reliable service in an environment of frequent instrument meteorological conditions, they need an IFR system that enables the following capabilities: to operate the single-engine airplanes that meet the demands of the small markets and airports the operators serve, to navigate under IFR on routes now classified as uncontrolled airspace, to communicate with air traffic control while cruising below

[17] FAA 1994 Report to Congress, p. 3.

10,000 feet, to communicate with company flight followers or dispatchers, and to execute instrument approaches at nearly 200 airports where no instrument approach facilities or procedures currently exist.

The current IFR system in Alaska does not enable these capabilities. Enhancing the current system so that it provides the IFR capabilities needed by the operators can be accomplished through the integration of emerging technologies and regulatory changes. However, if these technologies are not applied and regulations are not changed in a coordinated manner, the needed IFR capabilities will not be achieved.

Emerging Technologies

Navigation, communications, and air traffic control can benefit from technologies that are becoming available throughout Alaska. The global positioning system (GPS), currently operational for VFR and limited IFR use throughout the United States, could be used to great advantage for Alaskan IFR operations through establishment of instrument approaches at most or all of the airports served by commercial flights. The GPS also would provide the information required for en route navigation under IFR on direct routings to all of these airports. Use of the GPS for IFR en route and terminal area navigation in Alaska would obviate the need for further development of the State's ground-based electronic navigational aid system. Satellite-based voice communication systems that are or will soon be available throughout Alaska from commercial providers will enable direct communication between air traffic controllers and pilots operating at low altitude in terminal airspace and on the ground. Satellite-based, Mode S, or VHF data link technologies will provide an alternative to radar traffic separation for low altitude IFR operations in widespread Alaska regions.

Regulatory Changes Needed

Single-Engine IFR.—Current regulations contained in Part 135 limit the commercial, passenger-carrying operations that may be conducted under IFR in single-engine airplanes. The FAA has received several petitions since 1979 seeking relief from these limitations. All have been denied, except the latest petition, to which the FAA has not yet responded. This petition, submitted in 1992 by the Alaska Air Carriers Association, sought permission to operate single-engine airplanes powered by a turbine or reciprocating engine under IFR while carrying passengers. The FAA referred the issue to an Aviation Rulemaking Advisory Committee, which reported its findings to the FAA in early 1995. It is the Safety Board's understanding that the committee recommended approval of IFR passenger-carrying operations under Part 135 using turbine-powered single-engine aircraft, and that the FAA is currently considering proposed rulemaking that might permit a broader scope of commercial, passenger-carrying IFR operations in single-engine aircraft.

In 1993, Canada provided an exemption that permitted commercial, passenger-carrying IFR operations in turbine-powered single-engine airplanes, subject to specific airplane equipment, pilot experience, pilot proficiency, pilot training, and company requirements. On February 24,

1994, the FAA released a study of Part 135 single-engine IFR operations.[18] In the study, the FAA framed the issue as a tradeoff between the risk of serious accidents following failure of an airplane's single engine and the risk of serious accidents caused by VFR flying in adverse weather. The study concluded, "Allowing single-engine operations in IMC may benefit regions like Alaska, which relies extensively upon single-engine airplanes, but where a highly disproportionate share of accidents occur that involve continued flight under visual flight rules into IMC."

The Safety Board agrees with the conclusion of the FAA study and considers the prevalence in Alaska of accidents related to VFR flight into IMC as impetus for the FAA to proceed with rulemaking to allow commercial, passenger-carrying IFR operations in turbine-powered single-engine airplanes. Several single-engine airplane models powered by turbine engines have achieved very low rates of in-flight engine failures, and approving commercial, passenger-carrying IFR operations in these models, as Canada has done, would appear to provide a favorable reduction in exposure to VFR flight into IMC in exchange for a very small risk of engine failure in IMC.

However, most Alaska commuter airlines and air taxis will be using smaller, single-engine airplanes powered by a reciprocating engine well beyond the next decade. Allowing the use of these airplanes in commercial, passenger-carrying IFR operations may provide a greater level of safety than current operations under VFR, by preventing some accidents related to VFR flight into IMC. If properly operated and maintained, the modern reciprocating engines that power many of these airplanes may experience low enough rates of in-flight failure to achieve a net positive safety benefit from operating under IFR. Accordingly, the Safety Board believes that by December 31, 1997, the FAA should determine whether a positive effect on safety would be gained by allowing commercial, passenger-carrying IFR operations in single-engine airplanes powered by a reciprocating engine by evaluating the associated operating methods, maintenance methods, in-flight engine failure rates, accident rates related to in-flight engine failure, and accident rates related to VFR flight into IMC; then take appropriate action based on the evaluation.

Weather Reporting for Instrument Approaches.—Current provisions of 14 CFR Part 135.225 prohibit a commuter airline or air taxi pilot from beginning an instrument approach unless the airport has an NWS or NWS-approved weather reporting facility, or a source of weather information approved by the FAA. Further, the latest weather report must indicate that weather conditions are at or above authorized IFR landing minimums for that airport. As indicated earlier, many of the small airports at outlying villages now served by commuter airlines and air taxis do not have the type of automated or manual weather reporting facilities currently required for instrument approaches under Part 135. Thus, when an instrument approach to these airports becomes technically possible with the GPS, the current weather reporting requirements of 14 CFR Part 135.225 would prevent the execution of an instrument approach; consequently,

[18] Federal Aviation Administration. 1994. Part 135 single-engine instrument flight rules operations in instrument meteorological conditions. Final Report. Washington, DC.

incoming flights will have to rely on VFR and will be denied the safety advantages of IFR operation.

To enable use of a GPS-based IFR system for flights to the majority of Alaska's airports served by commuter airlines, the FAA will need to take action in one of two areas: either (a) expand AWOS/ASOS installations to include additional sites in Alaska that are served by commuter airlines; or (b) approve the execution of instrument approaches at small village airports where weather information is more limited. Accordingly, the Safety Board believes that by December 31, 1997, the FAA should evaluate the costs and benefits (including the safety benefits of converting commercial VFR operations to IFR operations) of the following three alternatives, then take appropriate action based on the evaluation of the three alternatives: (1) continuing the current limitations of 14 CFR Part 135.225 with no expansion of weather reporting facilities at the village airports served by commuter airlines in Alaska; (2) continuing the current limitations of 14 CFR Part 135.225 and installing automated or manual weather reporting facilities at these village airports; and (3) amending 14 CFR Part 135.225 to allow the execution of instrument approaches at these village airports with less extensive weather information, or with weather information obtained from a less official source, than the regulation currently requires.

Demonstrating the Benefits of an Enhanced IFR System

The applications of satellite-based navigation, communications, and data link technologies to IFR operations can reduce the occurrence of fatal accidents that result from VFR flight into IMC. These applications need to be accelerated, especially in Alaska where their safety benefits are potentially the greatest.

Demonstration of an enhanced low altitude IFR system in Alaska would provide the aviation community with important information about how such a system will better fulfill the State's air transportation needs while improving aviation safety. A demonstration would also help identify issues that may need to be resolved before an enhanced IFR system is implemented Statewide; for example, the geographic areas in Alaska that would be amenable to conversion from VFR to IFR operations. Such information can be obtained through a model demonstration program.

Respondents to the Safety Board's survey and participants in the Board's public forums identified two geographic areas of Alaska that they believed would benefit most from an enhanced low altitude IFR system: the Arctic region, with its expanse of flat terrain and widespread IMC; and southeast Alaska, with its mountainous terrain, routings along shorelines and through water passages, and widespread IMC.

These areas have different IFR flying environments, such as minimum en route altitudes, available course widths, and exposure to in-flight icing conditions. Selecting portions of both regions, or one or more commercial operators in both regions, for the demonstration program would allow the FAA to evaluate the applicability of IFR to commuter airline and air taxi operations in each environment. In the Arctic region, the demonstration program will provide

valuable information about the utility of an enhanced IFR system used in standard IFR operations. In the southeast coastal regions, the program will provide information about the need for airplanes to be equipped with anti- and de-icing capabilities. Also, the coastal regions will provide the opportunity to evaluate the feasibility of establishing reduced-width IFR airways that follow shorelines and water passages, below nearby higher terrain, because of the accuracy of the GPS and the capabilities of airborne GPS receivers to identify airway turning points and to display preplanned routes.

To reduce the occurrence of fatal accidents related to VFR flight into IMC as soon as possible, it is essential to begin making the current IFR system more usable for Alaska's aviation operators. The current level of technology is appropriate for a demonstration program. Accordingly, the Safety Board believes that by December 31, 1997, the FAA should implement a model program in the Arctic and southeast regions of Alaska to demonstrate a low altitude IFR system that better fulfills the needs of Alaska's air transportation system. The model program should include the following components:

(1) The use of the GPS as a sole source of navigational information for en route navigation and for nonprecision instrument approaches at a representative number of airports where instrument approaches do not currently exist. (Operators participating in the program will have to be allowed to conduct these operations without the integrity monitoring functions of the wide area augmentation system (WAAS) until WAAS is fully implemented in the demonstration region.)

(2) The use of satellite-based voice communications and satellite-based, Mode S, or VHF data link (for aircraft position and altitude) between aircraft in flight and air traffic controllers.

(3) The operation of commercial, passenger-carrying flights under IFR in turbine-powered single-engine airplanes equipped with redundant sources of electrical power and gyroscopic instrument vacuum/pressure.

(4) The use of currently uncontrolled airspace for IFR departures, en route flight, and instrument approaches in the demonstration program region.

Aerolodge/Guide Services

Hunting and fishing are important economic activities in Alaska and contribute to the livelihood of a large portion of the population. Transporting hunting and fishing customers by air is a well-established practice of commercial lodge operators and guides in the State. Based on judicial decisions from the early 1960s, the carriage by air of these customers is considered incidental to the hunt or fish guiding services. As a result, current FAA policy allows guides to fly their customers under the general operating rules of 14 CFR Part 91, which are less restrictive than those in Part 135.

A typical "lodge/guide" operation involves taking customers to a lodge or other remote site by light aircraft, and while there, providing guide service, food, lodging, and supplies. In some cases, several trips by air are involved, and usually the customer pays a single fee for the trip, including transportation.

From July 1991 through August 1993, the Safety Board investigated 29 accidents involving pilot guides (hunting/fishing guides who routinely transport clients to game locations by aircraft) or aerolodges (lodges that are accessible only by aircraft).[19] In all 29 accidents, the operations were being conducted under the provisions of Part 91. Fourteen of these accidents resulted in fatalities or serious injuries.

As a result of its investigations, the Safety Board asked the FAA to establish minimum pilot certification, experience, qualification, and training requirements under Part 135 for pilot guide/aerolodge operations presently conducted under Part 91 (Safety Recommendation A-94-99, issued May 4, 1994). The FAA responded on July 13, 1994, that it was reviewing all facets of the pilot guide/aerolodge industry to determine what measures were required to address the issues that were identified by the Board. Based on the FAA's action, the Safety Board classified Safety Recommendation A-94-99 "Open—Acceptable Response."

At its 1995 public forums in Alaska, the Safety Board heard comments from representatives of the Alaska Professional Hunter's Association and the recently formed Alaska Sport Fishing Industry Association. Both organizations believe that the industry should establish basic pilot experience, qualification, and training criteria. However, they also believe that these enhancements could be addressed under Part 91.

The Safety Board continues to believe that the requirements of Part 135 would provide an enhanced level of safety to aerolodge/guide activities. For example, Part 135 certification for aerolodge/guide operators would introduce safety improvements such as commercial licenses and instrument ratings for pilots, recurrent pilot training and checkrides, and standards for operational and maintenance procedures contained in FAA Operations Specifications. Further, certification under Part 135 would facilitate FAA oversight by requiring the owners of the services to obtain operating certificates which would, in turn, result in enhanced surveillance in accordance with FAA work program guidelines. However, achieving these safety improvements might be possible without requiring aerolodge/guide operators to comply with all of the provisions of Part 135; developing and adding special provisions for such operations under Part 91 could also offer an enhanced level of safety. Accordingly, the Safety Board believes that by December 31, 1996, the FAA should complete the review of the aerolodge/guide flight activities and propose rulemaking to place these activities under Part 135 or to modify Part 91 as needed to provide an equivalent safety standard. The Board classifies Safety Recommendation A-94-99 "Closed—Acceptable Action/Superseded" by the new recommendation issued as a result of this study.

[19] NTSB accident data.

Aerologging

In aerologging, a hovering helicopter picks up a felled tree and carries it as an external load, suspended beneath the aircraft, usually for a short distance to a staging area for further transport by other means. Helicopters are also used to transport loads of logs to yarding areas. The short-distance trips result in multiple cycles of a highly loaded engine and airframe structure.

During an 18-month period between January 1992 and June 1993, there were seven aerologging helicopter crashes that resulted in nine deaths.[20] All of the accidents involved single-engine helicopters in long-line logging operations in Alaska. The Safety Board's investigations identified, in all seven cases, improper operational and/or maintenance practices that reflected inadequate FAA surveillance of logging operations in southeast Alaska. In a letter to the FAA dated June 17, 1993, the Safety Board recommended actions to address the surveillance responsibility within the FAA (Safety Recommendation A-93-78), team inspections of aerologging operators (A-93-79), and on-site surveillance of aerologging operators (A-93-80). Based on subsequent actions taken by the FAA, the Board classified Safety Recommendations A-93-78 and -79 "Closed—Acceptable Alternate Action" on June 20, 1995. The Board also classified Safety Recommendation A-93-80 "Closed—Unacceptable Action" following the FAA's response that on-site surveillance was not feasible.

At the public forum session devoted to aerologging, panelists agreed that the FAA needed to assess airframe and component replacement and inspection intervals because of the heavy, high-cycle loading of these helicopters in aerologging service. The Safety Board agrees that the unique nature of aerologging justifies special attention from the FAA in its oversight of the certification and maintenance of the aircraft and component parts utilized in the operation. Consequently, the Safety Board believes that the FAA should review the maintenance programs of helicopters used in aerologging and develop prescribed service life limits and overhaul times on engines, airframe parts, and components as necessary to provide an adequate margin for safety.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

> Implement, by December 31, 1997, a model program in the Arctic and southeast regions of Alaska to demonstrate a low altitude instrument flight rules (IFR) system that better fulfills the needs of Alaska's air transportation system. The model program should include the following components:

[20] NTSB accidents ANC-93-LA-095, ANC-93-FA-061, ANC-93-FA-056, ANC-93-FA-033, ANC-92-LA-090, ANC-92-FA-044, ANC-92-FA-040.

(1) The use of the global positioning system (GPS) as a sole source of navigational information for en route navigation and for nonprecision instrument approaches at a representative number of airports where instrument approaches do not currently exist. (Operators participating in the program will have to be allowed to conduct these operations without the integrity monitoring functions of the wide area augmentation system (WAAS) until WAAS is fully implemented in the demonstration region.)

(2) The use of satellite-based voice communications and satellite-based, Mode S, or VHF data link (for aircraft position and altitude) between aircraft in flight and air traffic controllers.

(3) The operation of commercial, passenger-carrying flights under IFR in turbine-powered single-engine airplanes equipped with redundant sources of electrical power and gyroscopic instrument vacuum/ pressure.

(4) The use of currently uncontrolled airspace for IFR departures, en route flight, and instrument approaches in the demonstration program region. (Class II, Priority Action) (A-95-121)

Determine, by December 31, 1997, whether a positive effect on safety would be gained by allowing commercial, passenger-carrying, instrument flight rules (IFR) operations in single-engine airplanes powered by a reciprocating engine by evaluating the associated operating methods, maintenance methods, in-flight engine failure rates, accident rates related to in-flight engine failure, and accident rates related to visual flight into instrument meteorological conditions; then take appropriate action based on the evaluation. (Class II, Priority Action) (A-95-122)

Evaluate, by December 31, 1997, the costs and benefits (including the safety benefits of converting commercial visual flight rules operations to instrument flight rules operations) of the following three alternatives, then take appropriate action based on the evaluation of the three alternatives: (1) continuing the current limitations of 14 CFR Part 135.225 with no expansion of weather reporting facilities at the village airports served by commuter airlines in Alaska; (2) continuing the current limitations of 14 CFR Part 135.225 and installing automated or manual weather reporting facilities at these village airports; and (3) amending 14 CFR Part 135.225 to allow the execution of instrument approaches at these village airports with less extensive weather information, or with weather information obtained from a less official source, than the regulation currently requires. (Class II, Priority Action) (A-95-123)

Require, by December 31, 1997, operators that conduct scheduled and nonscheduled services under 14 CFR Part 135 in Alaska to provide flightcrews, during initial and recurrent training programs, aeronautical decisionmaking and judgment training that is tailored to the company's flight operations and Alaska's aviation environment, and provide similar training for Federal Aviation Administration principal operations inspectors who are assigned to commuter airlines and air taxis in Alaska, so as to facilitate the inspectors' approval and surveillance of the operators' training programs. (Class II, Priority Action) (A-95-124)

Develop appropriate limitations on consecutive days on duty, and duty hours per duty period for flightcrews engaged in scheduled and nonscheduled commercial flight operations, and apply consistent limitations in Alaska and the remainder of the United States. (Class II, Priority Action) (A-95-125)

Ensure, at all automated surface weather observing sites in Alaska for which the Federal Aviation Administration is responsible, and where currently there are qualified FAA weather observers (including contract weather observers) on site, that (1) operationally significant information, including distant weather information, is manually added to automated weather observations until technological progress eliminates the need; and (2) all such information is combined and disseminated in a single aviation weather report. (Class II, Priority Action) (A-95-126)

Assist the National Weather Service (NWS) in providing Alaska-specific graphical weather products on the NWS aviation weather program telecast nightly on Alaska public television and the Rural Alaska Television Network, on the Direct User Access Terminal System, on the Internet, and on commercial weather information services that use NWS information. (Class II, Priority Action) (A-95-127)

Assist the National Weather Service with an evaluation of the technical feasibility and aviation safety benefits of remote color video weather observing systems in Alaska. (Class II, Priority Action) (A-95-128)

Assist the State of Alaska with the development of appropriate procedures and establishment of a training program to enable mike-in-hand (near real-time) reports of airport conditions by designated State and contractual airport maintenance personnel. (Class II, Priority Action) (A-95-129)

Ensure, by December 31, 1996, that staffing levels and utilization at Automated Flight Service Station facilities in the Alaskan Region are adequate to resolve the reported problems in radio services over remote communications outlet frequencies. (Class II, Priority Action) (A-95-130)

Evaluate the Aviation Safety Program Manager work program and the associated Aviation Safety Program in the Alaskan Region, and develop appropriate national workload-based guidelines for staffing based on the evaluation. (Class II, Priority Action) (A-95-131)

Evaluate, by December 31, 1996, the work program for inspectors responsible for the Part 139 and 5010 airport inspection programs within the Alaskan Region, then develop appropriate staffing standards and personnel work responsibilities based on the evaluation and encourage the State of Alaska to participate in the 5010 program. (Class II, Priority Action) (A-95-132)

Modify the Notices to Airmen system in Alaska to accept and disseminate unverified information, labeled as such, about airport and off-airport field conditions, that is provided by designated aviation and nonaviation sources. (Class II, Priority Action) (A-95-133)

Complete, by December 31, 1996, the review of the aerolodge/guide flight activities and propose rulemaking to place these activities under Part 135 or to modify Part 91 as needed to provide an equivalent safety standard. (Class II, Priority Action) (A-95-134) (Supersedes A-94-99)

Review the maintenance programs of helicopters used in aerologging and develop prescribed service life limits and overhaul times on engines, airframe parts, and components as necessary to provide an adequate margin for safety. (Class II, Priority Action) (A-95-135)

Take appropriate action, by December 31, 1996, to (1) complete the distribution of videotapes designed to trigger discussion between pilots and managers about human factors issues ("trigger tapes") to all Part 135 operators in Alaska, (2) disseminate information about the trigger tape program to the FAA Principal Operations Inspectors assigned to Part 135 operators in Alaska, and (3) establish a program to evaluate operator use of the tapes. (Class II, Priority Action) (A-95-136)

The Safety Board also issued safety recommendations to the United States Postal Service, the National Weather Service, and the State of Alaska.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT and GOGLIA concurred in these recommendations.

By: Jim Hall
Chairman