Air Safety in Southwest Alaska
Capstone Baseline Safety Report

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1. Introduction

1.1. Purpose of Study

This report provides the Federal Aviation Administration (FAA) with information on air safety and aviation infrastructure in the Capstone program area as of January 1999. The data will establish a baseline to enable the UAA to conduct an independent study addressing the safety effects that result from Capstone.

The Alaskan Region's "Capstone Program" is an accelerated effort to improve aviation safety and efficiency through installation of government-furnished avionics equipment into aircraft in a select region of Alaska. This joint industry and FAA effort installs GPS (Global Positioning System) based avionics and data link communications suites in 150 commercial aircraft serving the Yukon-Kuskokwim delta area of Alaska. In addition to the on-board avionics systems, Capstone will deploy a ground infrastructure for weather observation, data link communications, surveillance, and Flight Information Services (FIS). Capstone will also increase the number of airports served by an instrument approach. The FAA hopes that these improvements will reduce the number of mid-air collisions, controlled flight into terrain incidents, and weather-related accidents in the Capstone area. The name "Capstone" is derived from the program's effect of drawing and holding together concepts and recommendations contained in reports from the Radio Telecommunications Conference of America (RTCA), the National Transportation Safety Board (NTSB), the Mitre Corporation's Center for Advanced Aviation System Development (CAASD), and Alaskan aviation industry representatives.

The FAA selected the Yukon-Kuskokwim Delta region of Alaska for the Capstone trial (Capstone Program Plan, 1999; p. 21). Virtually all the commercial aircraft serving this area fly out of the Bethel airport or seaplane base. We focus our safety inquiry on Air Carriers conducting passenger and cargo operations under parts 121 and 135, respectively, of the Federal Aviation Regulations (FAR) (14CFR, Chapter 1), since aircraft owned by these companies serving the Bethel area will be receiving Capstone avionics. However, general aviation aircraft also operate in the area, as do a limited number of military planes and private carriers not regulated under parts 121 and 135. We therefore consider the safety record of aviation overall in the study area.

Although we present data on safety incidents occurring over the past ten or more years, we emphasize the safety record during the most recent five years; e.g., from 1995 through 1999. Two challenges confront such a safety analysis. First, a significant regulatory change during this period confounds attempts to interpret aviation statistics. Second, data on air traffic in Alaska are limited and problematic. We briefly explain each of these issues.

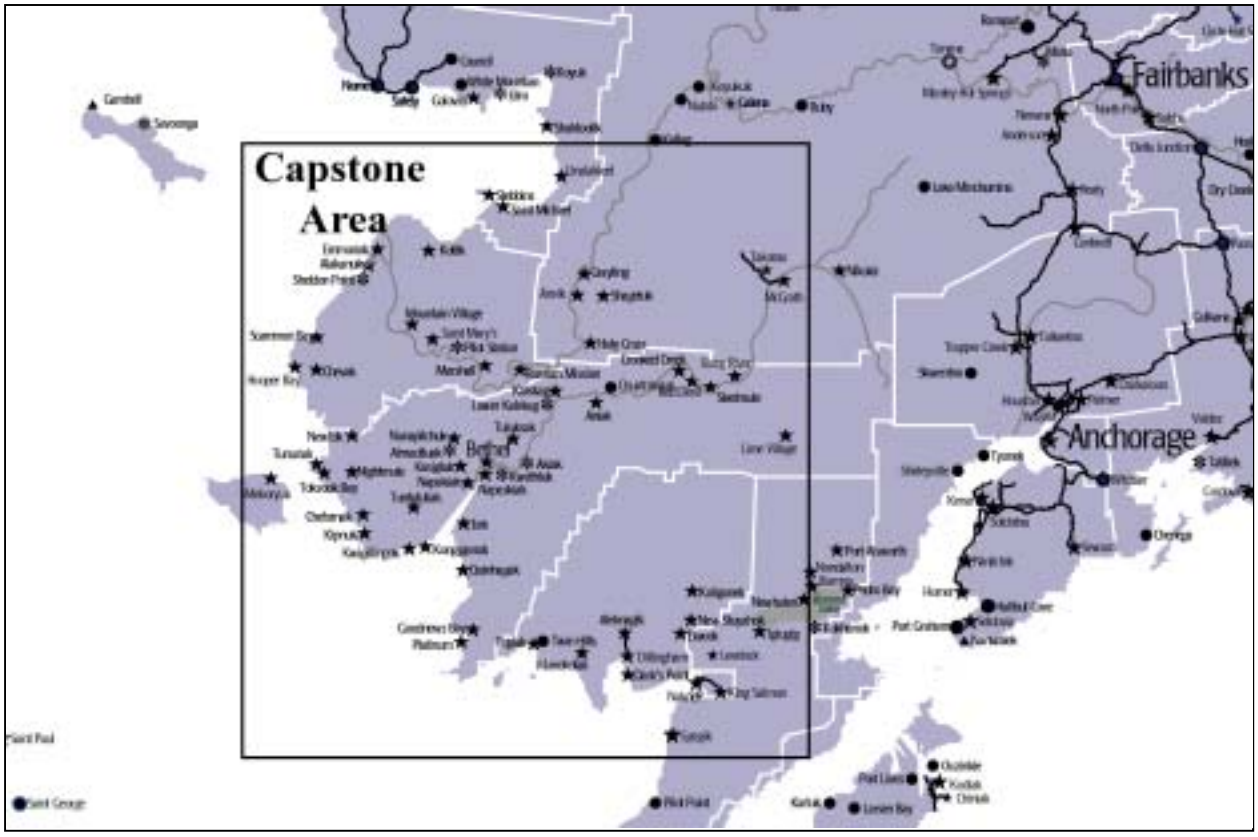
In early 1997, the FAA dramatically increased the scope of commercial aviation regulated under the more restrictive part 121. Since March 20, 1997, all scheduled service using turbojet aircraft or aircraft with 10 or more passenger seats falls under part 121. The impact of this regulatory change on flight operations is not known. However, it is likely that many companies providing passenger service adjusted their fleets to avoid the cost of recertification under part 121. In addition, some service conducted under part 135 prior to 1997 has probably since been converted under part 121, as presumably intended by the FAA. This regulatory change makes it difficult to compare data on incidents or operations from the beginning of the period (or earlier) to more recent data.

The other challenge with conducting a safety study of the Capstone area is the quality of data available on flight operations. The only source of publicly available data on air traffic that can

provide regional and local information is the FAA's Terminal Area Forecast (TAF)[1] system. This system uses data from airport operations to project future aviation system demands. The terminal operations data is of questionable reliability for airports that do not have a control tower to monitor traffic. Data from smaller airports, including those of most communities in the Capstone area outside the Bethel hub, can only be considered rough estimates of actual traffic. Consequently, accident and incident rates based on these data should be used with caution.

1.2. Description of the Capstone Area

The Capstone Area is defined in this report as the area from north latitude 58 to 64 degrees, and from west longitude 155 to 167 degrees (see map, below). This area of Alaska is remote, with only a few roads between villages, and no road connection to the state's metropolitan centers. Residents rely on water travel in the summer, snow travel in the winter, and air travel year round. The 75 villages in the area total just over 32,000 residents, one-quarter of whom live in the two regional hubs, Bethel and Dillingham. Of the 73 other villages, 55 have fewer than 500 residents.



[1] The Terminal Area Forecast System (http://www.apo.data.faa.gov/faatafall.HTM), created by the FAA's Office of Aviation Policy and Plans, is the official forecast of aviation activity at FAA facilities. The forecasts are prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the public.

Air Operations In The Capstone Area

The most recent data for terminal operations are estimates for 1999. The Capstone area contains 110 airport facilities, including 96 airports, 1 heliport, and 13 seaplane bases. Table 1 shows the 1999 traffic TAF estimates. These total 1999 commercial traffic of about 250 thousand take-offs and landings. These figures represent about 20 percent of commercial air traffic in the Alaska region.[2]

Table 1-1 also shows total general aviation traffic of 323,000, or about 22 percent of the region wide general aviation. A much greater share of general aviation in the Capstone area is itinerant traffic than in the region as a whole. One should be aware that the airport terminal observations do not include landings and departures at locations away from established airports, and therefore underestimate total aviation traffic in the region, especially itinerant general aviation originating in urban areas such as Anchorage and Fairbanks. Again, these numbers and any safety incident rates estimated from them should be interpreted with care.

Table 1-1: Total Terminal Operations Activity, 1999

	Capstone area	Alaska region
FAR part 121 Air Carriers	20,015	240,720
Air Taxis and Commuters	231,830	963,815
General Aviation – Local	94,513	616,628
General Aviation - Itinerant	228,291	821,666
Military	3,717	77,660
Total operations	578,366	2,720,489

Source: FAA Office of Aviation Policy and Plans Terminal Area Forecast System, 1999 (http://www.apo.data.faa.gov/faatafall.HTM),

1.4. Review of Recent Studies

Four recent studies are of particular interest and relevance to the Capstone project:

- NTSB (1995) *Aviation Safety in Alaska*
- FAA (1999) *Joint Interagency/Industry Study of Alaskan Passenger and Freight Pilots*
- Garrett, L. C., G. A. Conway, J. C. Manwaring (1998)"Epidemiology of Work-Related Aviation Fatalities in Alaska, 1990-94" in Aviation, Space and Environmental Medicine Vol. 69, No. 12.
- Mitchell, M. T. (American Airlines Training Corporation) (1982*) Final Report on Definition of Alaskan Aviation Training Requirements.*

Geographic Area. All four studies cover the state of Alaska. They are relevant because the problems they describe are problems in the Capstone area as well. Their characterization of commuter and air taxi operations in Alaska is also applicable to the Capstone area.

Data Sources. The FAA, NTSB and Garrett, et. al. used the NTSB/FAA accident and incident database. The FAA and NTSB studies also fielded surveys. The FAA surveyed pilots in 1998. The NTSB surveyed pilots and operators in 1995. The NTSB study also included interviews with Alaska aviation personnel; information from public forums; and a 1994 survey of commercial pilots and operators conducted by the Ames Research Center of NASA. The Mitchell study is also survey based. The study team interviewed air taxi operators and pilots. Garrett, et al. combined the NTSB database with statewide data on occupational deaths.

[2]At the time we did the analysis, the official data included over 600,000 air carrier operations for Atqasuk, a small community with no air carrier service. We used 0 for Atqasuk, and adjusted the statewide totals accordingly. Te FAA has since revised the 60,000 figure to 0.

Brief Summary. The NTSB (1995) report examined commuter airlines, air taxis and general aviation accidents. The study focused on accidents during take-off and landing and accidents related to flying under visual flight rules (VFR) into instrument meteorological conditions (IMC). It identified VFR into IMC as the leading safety problem for commuter airlines and air taxis. The study identified seven safety issues: (1) pressures on pilots and commercial operators to provide services in a difficult environment with inadequate infrastructure, (2) inadequate weather reporting, (3) inadequate airport inspections and airport condition reporting, (4) current regulations for pilot duty, flight and rest time, (5) inadequacy of the current instrument flight rules (IFR) system, (6) enhancements to the IFR system needed to reduce reliance on VFR and, (7) the needs of special aviation operations.

The FAA (1999) study has a narrower focus than the NTSB. It examined Controlled Flight into Terrain (CFIT) accidents where VFR into IMC is listed as a causal factor. The aim of the FAA study was to identify differences between CFIT companies (company practices and pilots who fly for CFIT companies) and non-CFIT companies. The study found several statistically significant differences: Non-CFIT pilots: have more flying experience, perceive their company's safety program is better than that of CFIT companies, and rely less on station agents for pre-flight weather decisions.

Garrett et al. (1998) also examined CFIT accidents as part of a larger study comparing aviation fatality rates to those of other occupations. They analyzed differences among pilots based on levels of training and experience, and found that commercial and transport pilots were significantly more likely to have IMC conditions at the crash site than pilots holding a private pilot's license.

Mitchell (1982) focused on air taxi operations, and interviewed 177 air taxi pilots. The study was the basis for designing a training program suited to the conditions that pilots face in Alaska. It identified decision-making skills and operational procedures that are necessary for operations in Alaska's weather and environmental conditions. Based on the interviews, the team found that lack of weather information and communication facilities, management policies and insufficient decision-making skills combined with rapidly changing weather and difficult terrain to make flying hazardous. Data from the interviews showed overloading, incomplete weather information, pressure to fly in marginal conditions, lack of training in mountain flying and off-airport take-offs and landings, pilots with alcohol problems, and violations of the 8-hour rule were noted by a large share of pilots as being safety problems. Pilots also noted that profit motives drove many management decisions to fly in unsafe conditions.

Relevance to the Capstone Project and its Evaluation. All four of these studies are relevant for the Capstone evaluation. The FAA, NTSB and Garrett, et. al. are relevant for the project because they provide detailed information about CFIT accidents. All three studies recommend using global positioning systems (GPS) to reduce accidents due to flying under VFR into IMC, improving weather reporting services at VFR only airports and using GPS technology to expand the IFR route structure. The Mitchell study provides a detailed discussion of accident causes and factors that will not be addressed by the Capstone avionics. It helps us to understand cases where the avionics have little or no effect on safety.

Recommendations Relevant to the Safety Study Design. From the FAA study, we plan to use both the survey data and the research findings/recommendations. We will use the survey data to see if there are differences between pilots flying in the Capstone area and the rest of Alaska, and to identify factors in accidents that are not addressed by Capstone that the study needs to control for. These factors include risk taking behaviors, company operations, training, and safety policies and procedures. From the NTSB and Garret, et al., and Mitchell we are using findings and recommendations in our study design[3]. The Mitchell study also confirmed that pilots are somewhat

[3] We feel that the sample data are not useful to our study because of the small sample sizes and unknown sampling methods in the NTSB and NASA surveys. The NTSB survey size was 50, including 21 from

reluctant to be interviewed, fearing punitive action. This gives us a more complete understanding of the responses to our survey.

2. Aviation Accidents and Incidents in the Capstone Area

2.1. Summary

Section 2 reviews accidents in Alaska and in the Capstone area by type of carrier, estimates accident rates for Alaska and the Capstone area, and assesses the extent to which Capstone avionics might have been helpful in preventing Capstone area accidents that occurred in the 1990s.

Part 135 operators accounted for two-thirds of the accidents in the Capstone area (204 out of 314). Most of their accidents (179 out of 204) occurred on non-scheduled flights. These patterns hold true for fatal accidents (20 out of 28) and fatalities (31 out of 47) as well; however, all of part 135 operators' fatal accidents were on unscheduled flights. In general, Alaska accident and fatality rates are higher than the U.S. rates. For commuters, Alaska's accident rate is 3.6 times as high as the U.S., and for part 121 carriers, 6.7 times as high. The Alaska commuter fatality rate is 10 times as high as the U.S. rate, but Alaska's part 121 fatality rate is one-third lower than the U.S. rate.

Capstone area rates are sometimes higher and sometimes lower than Alaska rates. For part 121 carriers, the Capstone area accident rate is one-third higher than the Alaska rate, and the fatality rate is 8 times higher. For commuters and air taxis considered together, the Capstone area accident rate is 1.2 times the Alaska rate, but the Capstone area fatality rate is less than one-third the Alaska rate. Capstone area general aviation rates are lower than the statewide rates – about one half the accident rate and one-quarter the fatality rate.

If all aircraft in the Capstone area in the 1990 had been equipped with Capstone avionics, it could have helped pilots to avoid about one in seven accidents, but almost half of fatal accidents. If we include accidents where the avionics would have helped mitigate some but not all of the causes of the accident, the avionics might have helped prevent over half of accidents, fatal accidents, and fatalities.

The types of accidents the Capstone program is most likely to prevent – mid-air collisions and CFIT accidents – are relatively rare in the Capstone area. The number each year varies from zero to two. So, in the 3-year study period, even a complete absence of these types of accidents could be due to chance. However, we will also assess the value of Capstone avionics in preventing incidents, such as near mid-air collisions, and collect data on pilots' views of the equipment. By including all three approaches we hope to accurately assess the effectiveness of the Capstone program.

2.2. Accidents in Alaska and the Capstone area

Our source of data about accidents and incidents is the NTSB Aviation Accident and Incident database. The data cover the period from 1/1/83 through 10/15/99. Complete data (containing information on causes and factors) extend through 9/15/98. Table 2.1 summarizes data for Alaska from the NTSB reports from 1990 through 1999. It tabulates the number of accidents plus incidents, accidents, fatal accidents, and fatalities by type of operation for the Capstone area and for Alaska as a whole.

The NTSB data include all the accidents but only a subset of incidents -- generally those that were downgraded from accidents -- that are reported to the FAA. Of the 48 incidents in the NTSB

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southwest Alaska. The NASA survey included 41 "voluntary" participants from Alaska.

dataset, 11 were in the Capstone area. Of those 11, nine were on air carriers operating under FAR part 135, and two were general aviation incidents (part 91). Because the great majority of incidents are not included in the NTSB database, we restrict our in this baseline report to accidents. We will analyze incident data from the FAA and NASA later in the project.

Between 1990 and 1999, 314 air accidents occurred in the Capstone area, of which 28 involved fatalities. Part 135 commercial operators accounted for 65 percent of total accidents and 71 percent of fatal accidents in the Capstone area during this period.

Table 2.1. Accidents, Incidents and Fatalities Reported to the FAA, 1990-99

Number of Accidents and Incidents

	All Accidents and Incidents		*Accidents*		*Accidents w/ Fatalities*		*Number of Fatalities*	
	Capstone	*Alaska*	*Capstone*	*Alaska*	*Capstone*	*Alaska*	*Capstone*	*Alaska*
Air Carriers Operating Under FAR Part Number 121								
Non Scheduled	2	9	2	8	1	1	4	4
Scheduled	1	16	1	8	0	0	0	0
Air Carriers Operating Under FAR Part Number 135								
On Demand	89	288	86	278	9	38	12	102
Commuters	28	82	25	72		14		38
135 Operating as Part 91	96	446	93	436	11	53	19	101
General Aviation								
FAR Part 91	106	848	104	841	7	75	12	131
Other								
FAR Part 125	1	2	1	2				
FAR Part 129		6		5		1		2
FAR Part 133	2	19	2	18		5		11
FAR Part 137		1		1				
Total	325	1717	314	1669	28	187	47	389

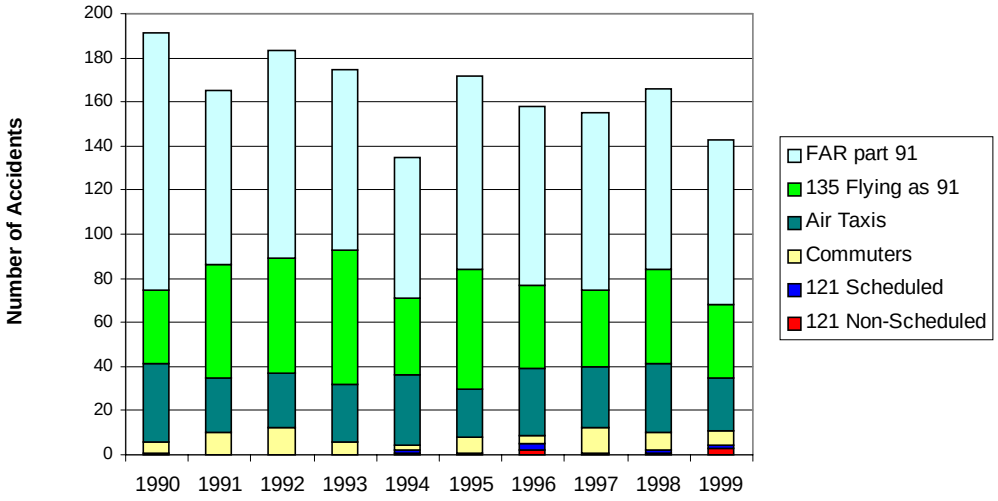
Source: NTSB (1999) Accident and Incident Database, 1983-99. Data cover 1/90 through 10/15/99

Overall, the number of Alaska aviation accidents has been declining in recent years. Figure 2.1 shows that total air accidents declined from over 185 per year in the early 1990s to about 160 per year in the late 1990s. FAR part 91 operations comprise the largest share of accidents statewide.

Figure 2.2 shows that the number of accidents has not trended downward in the Capstone area as it has in the rest of the state. The number of accidents in the area fluctuated considerably from year to year in the 1990s, ranging from 19 to 39 annually.

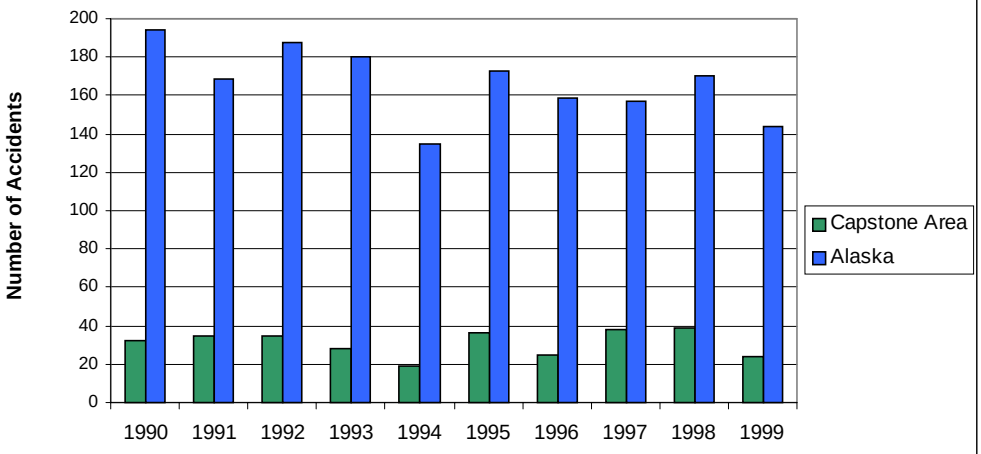
FAR part 135 operators accounted for a greater share of total accidents in the Capstone area, (65%), than they did statewide (47 %). This difference held true for scheduled (commuter), unscheduled (air taxi) and part 91 flights of part 135 operators. Figure 2.4 also shows that of FAR part 135 operations--which accounted for 65% of accidents in the Capstone area--air taxis and part 135 operations flying under part 91 made up the largest shares.

Figure 2.1 Accidents in Alaska 1990-99 by Type of Carrier and Year



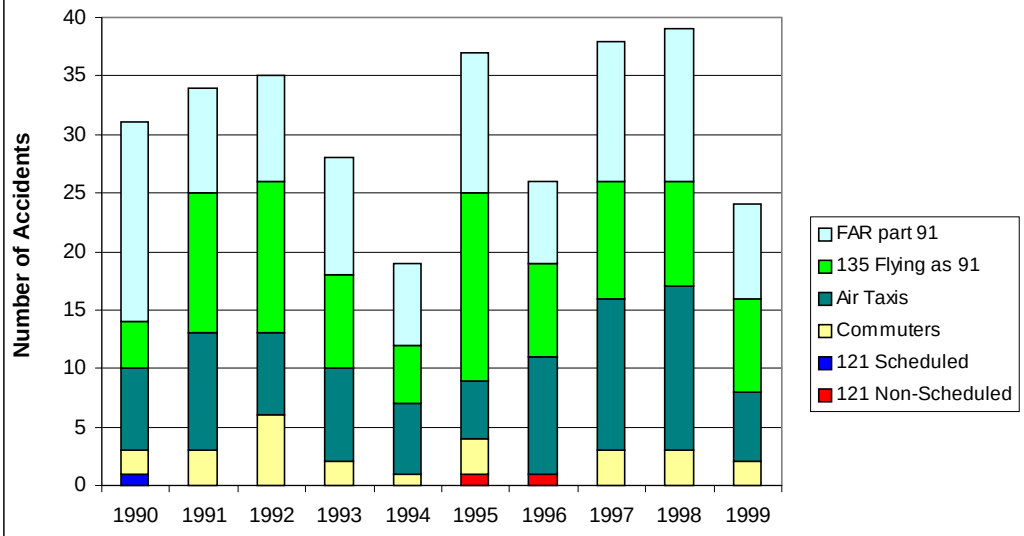
Source: NTSB (1999) Accident and Incident Database
Notes: Data cover the period from 1/1/90-10/15/99
Part 91 accidents divided into part 135 operators flying under part 91 and Other Part 91, based on aircraft owner and operator information

Figure 2.2 Accidents in Alaska and the Capstone Area, 1990-99



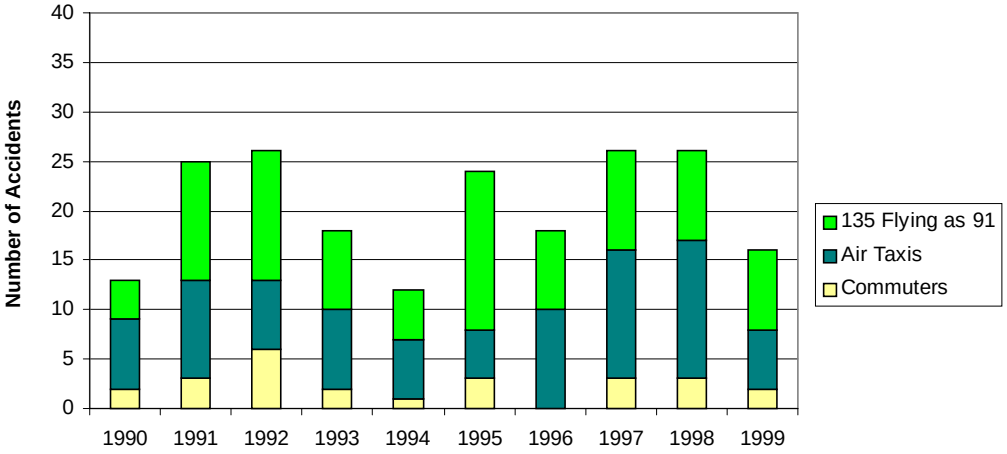
Source: NASDAC (1999) Accident and Incident Database
Notes: Data cover the period from 1/1/90-10/15/99

Figure 2.3. Accidents in the Capstone Area 1990-99 by Type of Carrier



Source: NTSB (1999) Accident and Incident Database
Notes: Data cover the period from 1/1/90-10/15/99
Part 91 accidents divided into part 135 operators flying under part 91 and Other Part 91, based on aircraft owner and operator information

Figure 2.4. Accidents in the Capstone Area, 1990-99, for Commuters, Air Taxis and Part 135 Operators Flying as Part 91



Source: NTSB (1999) Accident and Incident Database
Notes: Data cover the period from 1/1/90-10/15/99
Part 91 accidents divided into part 135 operators flying under part 91 and Other Part 91, based on aircraft owner and operator information

2.3. Accident rates

To construct accident rates we need data for both the numerator--the number of accidents--and the denominator--the amount of flying, which is often measured in departures, hours flown, or enplanements. We have excellent data on accidents, and all our rate calculations use the same accident data. The accident and fatality counts for Alaska and the Capstone area come from the NTSB accident and incident database. Accident and fatality counts for the U.S. come from FAA (1999) *Accidents, Fatalities and Rates, Preliminary Statistics*. As discussed above, we will look at incident rates in more depth later in the study. Data on departures, hours flown, or enplanements in the Capstone area are all limited. We carefully reviewed the available data sets with staff from FAA, BTS, NTSB, and NIOSH.

- BTS data include departures and flight hours. However, these data are available only at the company and state level and not for the Capstone area. Also, they show only the commuter departures and hours of part 135 air carriers and don't include those carriers' unscheduled flights.
- The national General Aviation and Air Taxi Survey provides an estimate of total Alaska flight hours for unscheduled air taxi and general aviation operations as well as scheduled commuter service. However, the data are reported at the state level, and it is not currently possible to extract numbers for the Capstone area. We are in the process of acquiring and analyzing raw data from the General Aviation Survey in Alaska, to try to separate out data for the Capstone area.
- The APO Terminal Forecast Survey Summary Report from the FAA's Aviation Policy and Plans Office uses historical data on traffic counts from FAA Form 5010, the Airport Master Record. This is the only systematic data available for the Capstone area, and the published data for Capstone airports are only available for 1999. For airports with control towers, airport managers report the number of aircraft cleared for takeoff or landing. For airports without towers, which include all the Capstone area airports except Bethel, airport managers estimate the annual traffic counts. We have made rough estimates of annual departures by dividing the traffic counts by two. This method assumes that each departure results in a traffic count at both the departing and the arriving airport. It slightly undercounts unscheduled air taxi and general aviation departures, since it would not count departures from off-airport locations. However, we think such departures are only a small part of the total.

The following tables and figures present and use as much of the available data as possible. When multiple sources of data lead to similar findings, we can have more confidence in those findings. Three different tables present accident rates based on different data sources, measured both by departures and by hours flown.

In Table 2.2 we compare rates for the U.S., Alaska, and the Capstone area for the five year period from 1995 through 1999. We were able to compare all three areas only for part 121 carriers. We were able to compare Alaska and the U.S. for commuter service as well. Departure information for 121 carriers for the U.S. comes from FAA (1999), covering 1995-1998. Data for 1999 data are not yet available. For Alaska we started with the 1996 Alaska departures published in *the Statistical Handbook of Aviation*. We applied annual rates of change from Alaska tower data (reported on forms 5010) to the 1996 number, and generated estimated part 121 departures from 1990 to 1999. For the Capstone area, we used tower data from the APO Terminal Forecast Survey Summary Report data for 1999. We assumed that the 1999 departures represent the average over the period 1995-99.

Commuter departure information for the U.S. came from the FAA (1999). We used data from the Bureau of Transportation Statistics (BTS) Form 298c-A1 for 1995 to 1999 to estimate departures for commuters in Alaska. There are no departure data available for commuters in the Capstone area.

Figures 2.5 and 2.6 show accidents and fatalities per 100,000 departures from Table 2.2. They compare part 121 carriers and commuters in the Capstone area, the state, and the U.S. Figure 2.5 shows that for part 121 carriers, the Capstone area rate of 4 accidents per 100,000 departures is 8.7 times higher than the U.S. rate and 1.3 times as high as the statewide rates. For commuters, the accident rate in Alaska is 3.6 times as high as for the U.S. We could not calculate rates for commuters in the Capstone area. Figure 2.6 shows that for 121 carries, fatalities per 100,000 departures in the Capstone area are 8 times as high as the Alaska rate and 5 times the U.S. rate.

Table 2.2 Estimated Accident and Fatality Rates per 100,000 Departures: Part 121 and Commuters for the Capstone Area, Alaska and the U.S., 1995 - 1999[e]

	Annual Average, 1995 to 1999								
	Departures [3,4,5]			*Accidents [1]*			*Fatalities [1]*		
Category	*Capstone [c]*	*Alaska*	*US [6]*	*Capstone*	*Alaska*	*US [6]*	*Capstone*	*Alaska*	*US [6]*
121 Carriers[a]	10,008	84,158	9,326,079	0.4	2.6	42.8	0.8	0.8	139.3
Commuters[b]	na	380,565	2,230,259	2.2	7.4	12.0	0.0	3.8	2.0

	Rate per 100,000 Departures					
	Accidents			*Fatalities*		
Category	*Capstone [c]*	*Alaska*	*US [6]*	*Capstone [c]*	*Alaska*	*US [6]*
121 Carriers[a]	4.00	3.09	0.46	8.0	1.0	1.5
Commuters[b]		1.94	0.54	0.0	1.0	0.1

Sources:

1. NTSB (1999) Accident and Incident Database, 1983-99. Data in this table cover period from 1/1/95 through 10/15/99.
2. FAA (1999) APO Terminal Area Forecast Summary Report
3. FAA (1999) Tower Data from Airports in Alaska
4. FAA (1996) Statistical Handbook of Aviation, tables 4.6, 8.8
5. Bureau of Transportation Statistics (BTS) Form 298 A1 unpublished data.
6. FAA (1999) Accidents, Fatalities and Rates, Preliminary Statistics

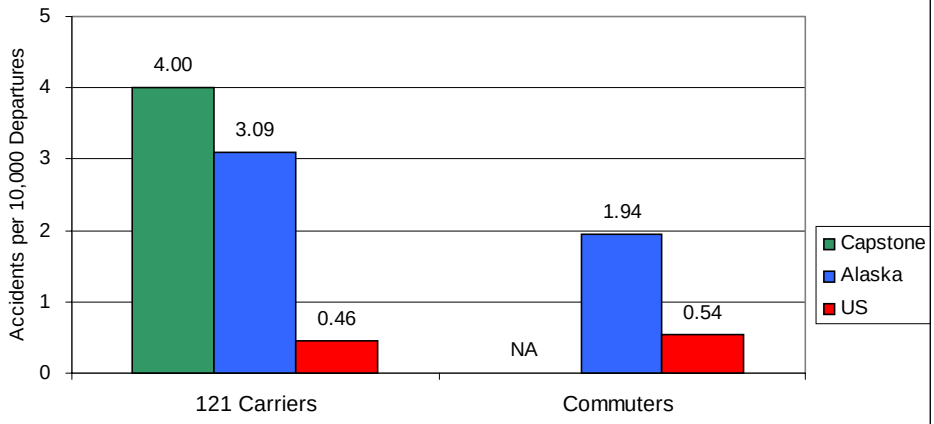
Notes

a. To estimate departures for part 121 carriers in Alaska, we adjusted 1996 departures published in the Statistical Handbook of Aviation.
To generate a series, we applied annual change from the APO Terminal Forecast Summary Report to the 1996 departures.
We adjusted the 1999 APO Terminal Area Forecast Summary Report total for 121 carriers, dropping a village reporting 600,000 departures.

b. Departures for FAR part 135 scheduled carriers come from BTS form 298-A1 reports.
We adjusted the BTS data to account for missing quarters and non-reporting. We used Q2-4 1995 and Q1 1996 as both 1995 and 1996.

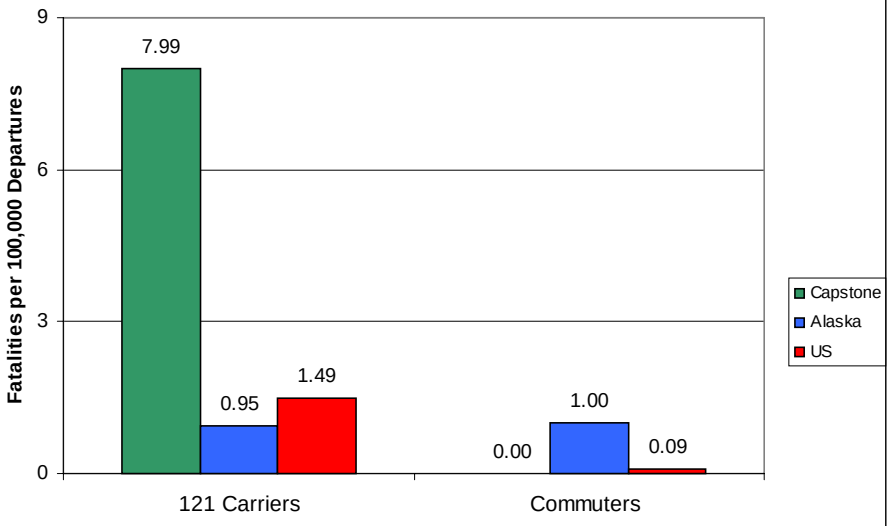
c. Five year rates for the Capstone region use a five-year average as the numerator and 1999 departures as the denominator.

Figure 2.5: Estimated Accident Rates, 1995-99
Part 121 Carriers and Commuters



Sources: 1. NTSB (1999) Accident and Incident Database, 1983-99. Data are from 1/1/95 through 10/15/99; 2. FAA (1999) APO Terminal Area Forecast Summary Report; 3. FAA (1999) Tower Data from Airports in Alaska; 4. FAA (1996) Statistical Handbook of Aviation, tables 4.6, 8.8; 5. (BTS) Form 298 A1 unpublished data; 6. FAA (1999) Accidents, Fatalities and Rates, Preliminary Statistics
Notes: a. To estimate departures for part 121 carriers in Alaska, we adjusted 1996 departures published in the Statistical Handbook of Aviation.
b. Five year rates for the Capstone area use a five-year average as the numerator and 1999 departures as denominator.

Figure 2.6 Estimated Fatality Rates, 1995-99
Part 121 Carriers and Commuters



Sources: 1. NTSB (1999) Accident and Incident Database, 1983-99. Data are from 1/1/95 through 10/15/99; 2. FAA (1999) APO Terminal Area Forecast Summary Report; 3. FAA (1999) Tower Data from Airports in Alaska; 4. FAA (1996) Statistical Handbook of Aviation, tables 4.6, 8.8; 5. (BTS) Form 298 A1 unpublished data; 6. FAA (1999) Accidents, Fatalities and Rates, Preliminary Statistics
Notes: a. To estimate departures for part 121 carriers in Alaska, we adjusted 1996 departures published in the Statistical Handbook of Aviation.
b. Five year rates for the Capstone area use a five-year average as the numerator and 1999 departures as denominator.

Table 2.3 shows accident and fatality rates for air taxis and commuters and for general aviation. In this table we have data for Alaska and the Capstone area. The accident and fatality counts come from the NSTB database. The departure data come from the APO Terminal Forecast Survey *Summary Report* data for 1999.

Figures 2.7 and 2.8 present the data from table 2.3. Figure 2.7 shows that accident rates for air taxis and commuters in the Capstone area are higher than in the state as a whole and general aviation accident rates are lower. We did not compare these rates to those in the U.S. as whole because no comparable national level data are available. Figure 2.8 shows that fatality rates for air taxis and commuters and for general aviation are lower in the Capstone area than in the state as a whole.

Table 2.4 compares accidents and fatalities per 100,000 hours flown for Alaska and the US as a whole. We did not have access to data for the Capstone area on hours flown. Figure 2.9 shows that the accident rate for air taxis and general aviation in Alaska is 3 times as high as in the US as a whole. Fatalities per 100,000 hours flown for air taxis and general aviation are 1.8 times as high.

Table 2.3: Estimated Accident and Fatality Rates per 100,000 Departures: Air Taxis, Commuters and General Aviation for Alaska and Capstone Areas, 1995 - 1999

	Annual Average, 1995 to 1999					
	Departures[2,3]		*Accidents*[1,c]		*Fatalities*[1,c]	
Category	*Capstone*[b]	*Alaska*	*Capstone*	*Alaska*	*Capstone*	*Alaska*
Air Taxis and Commuters[a]	115,915	488,262	22.2	75	1.8	26.6
General Aviation[d]	161,402	651,250	10.6	81.2	0.8	12.6

	Rate per 100,000 Departures			
	Accidents		*Fatalities*	
Category	*Capstone*[b]	*Alaska*	*Capstone*[b]	*Alaska*
Air Taxis and Commuters[a]	19.2	15.4	1.6	5.4
General Aviation[d]	6.6	12.5	0.5	1.9

Sources:

1. NTSB (1999) Accident and Incident Database, 1983-99. Data are from 1/1/95 through 10/15/99.
2. FAA (1999) APO Terminal Area Forecast Summary Report
3. FAA (1999) Tower Data from Airports in Alaska

Notes: a. Departure data for air taxis and commuters do no count activity at private airports and off-airport sites. We assume that FAR part 135 operating under 91 are counted in the departures.

b. Five year rates for the Capstone area use a five-year average as the numerator and 1999 departures as the denominator.

c. Averages use 9.5 months of accident data for 1999 instead of 12.

d. 'General Aviation' is from APO Terminal Area Forecast reports. We assume this is FAR part 91.

Table 2.4: Estimated Accident and Fatality Rates per 100,000 Hours Flown: Air Taxis and General Aviation, for US[b] and Alaska, 1995 - 1999

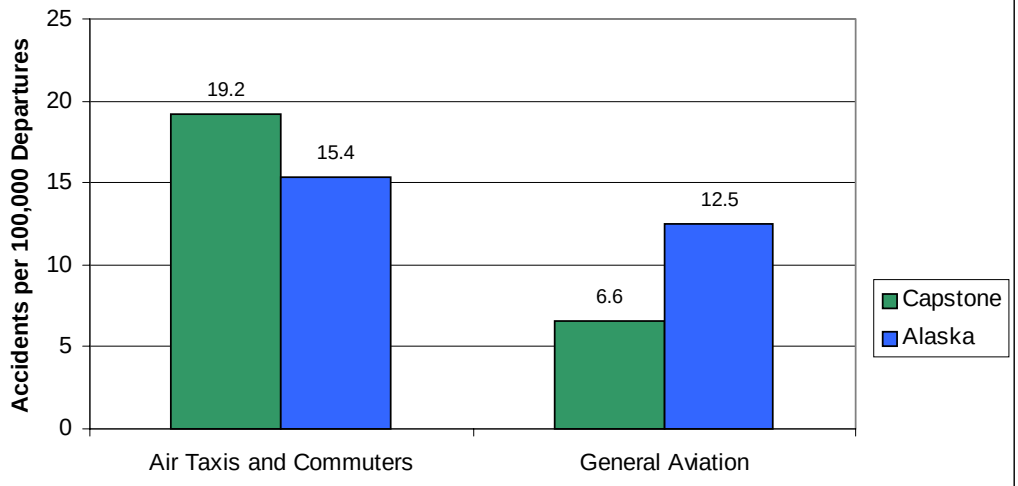
	Annual Average, 1995 to 1999					
	Hours Flown [a]		*Accidents*		*Fatalities*	
Category	*Alaska [2]*	*US [3]*	*Alaska [1]*	*US [3]*	*Alaska [1]*	*US [3]*
Air Taxis and General Aviation	643,000	26,934,300	148.8	2,026.2	31.2	727.8
Air Taxis		2,075,500		82.2		52.4
General Aviation		24,858,800		1944.0		675.4

	Accidents per 100,000 Hours Flown [a]			
	Accidents		*Fatalities*	
Category	*Alaska*	*US*	*Alaska*	*US*
Air Taxis and General Aviation	23.1	7.5	4.9	2.7
Air Taxis		4.0		2.5
General Aviation		7.8		2.7

Sources:
1. NTSB (1999) Accident and Incident Database, 1983-99. Data in this table cover period from 1/1/95 through 10/15/99.
2. FAA (1996) "Active General Aviation and Hours Flown by FAA Region and State of Based Aircraft"
3. FAA (1999) Accidents, Fatalities and Rates, Preliminary Statistics.

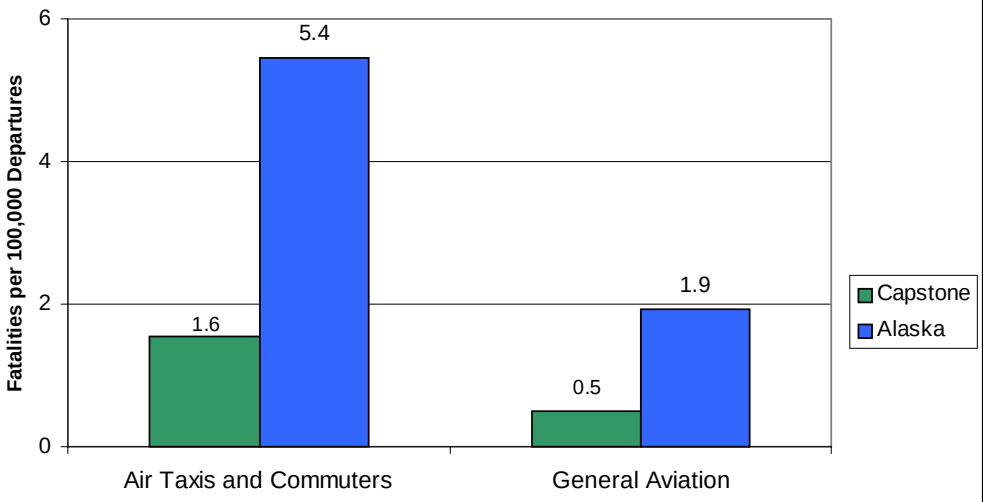
Notes:
a. Accident and fatality rates for Alaska use a five-year average as the numerator and 1996 hours flown as the denominator.
b. US data cover 1994-1998.

Figure 2.7: Estimated Accident Rates, 1995-99 Commuters, Air Taxis and General Aviation



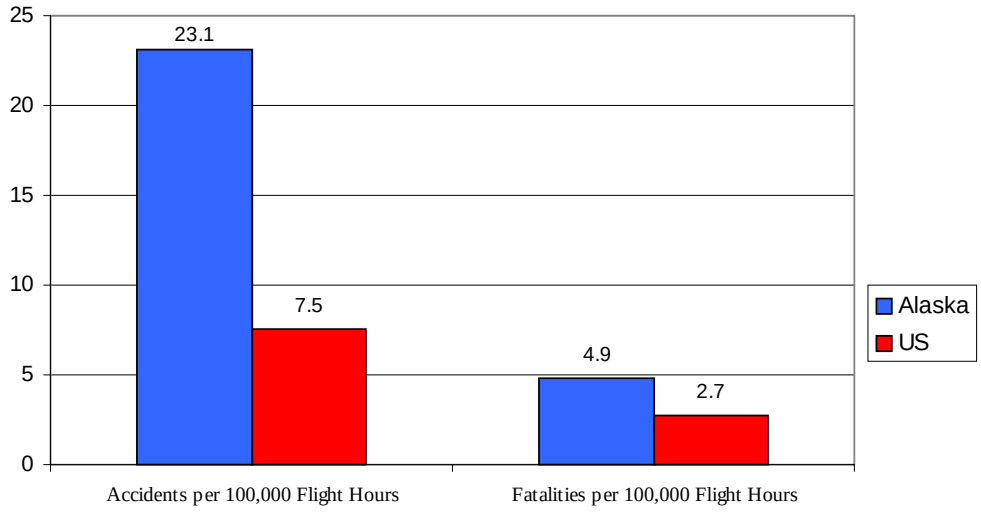
Sources: 1. NTSB (1999) Accident and Incident Database, 1983-99. Data are from 1/1/95 through 10/15/99; 2. FAA (1999) APO Terminal Area Forecast Summary Report; 3. FAA (1999) Tower Data from Airports in Alaska
Notes:a .Departure data for air taxis and commuters do no count activity at private airports and off-airport sites.
b. Five year rates for the Capstone region use a five-year average as the numerator and 1999 departures.
c. Averages use 9.5 months of accident data for 1999 instead of 12.
d. 'General Aviation' is from APO Terminal Area Forecast reports. We assume this is FAR part 91.

Figure 2.8: Estimated Fatality Rates, 1995-99
Commuters, Air Taxis and General Aviation



Sources: 1. NTSB (1999) Accident and Incident Database, 1983-99. Data are from 1/1/95 through 10/15/99; 2. FAA (1999) APO Terminal Area Forecast Summary Report; 3. FAA (1999) Tower Data from Airports in Alaska
Notes:a .Departure data for air taxis and commuters do no count activity at private airports and off-airport sites.
b. Five year rates for the Capstone region use a five-year average as the numerator and 1999 departures.
c. Averages use 9.5 months of accident data for 1999 instead of 12.
d. 'General Aviation' is from APO Terminal Area Forecast reports. We assume this is FAR part 91.

Figure 2.9: Accidents and Fatalities per 100,000 Hours Flown 1995-1999
Air Taxis and General Aviation



Sources: 1. NTSB (1999) Accident and Incident Database, 1983-99. Data in this table cover period from 1/1/95 through 10/15/99; 2. FAA (1996) "Active General Aviation and Hours Flown by FAA Region and State of Based Aircraft"; 3. FAA (1999) Accidents, Fatalities and Rates, Preliminary Statistics.
Notes: a. Accident and fatality rates for Alaska use a five-year average as the numerator and 1996 hours flown as the denominator.
b. US data cover 1994-1998.

2.4. Accidents Potentially Preventable by Capstone Equipment

The Capstone program includes a number of safety enhancements that may be able to prevent accidents from a wide variety of causes. The avionics, training, and data provided by the Capstone system are more likely to help pilots avoid some types of accidents than others, however. We looked at information about accidents in the Capstone area from 1990-98, and hypothesized whether or not the avionics might have helped the pilot avoid the accident, had the planes been equipped with Capstone avionics at the time.[4] We then considered. The results of this exercise are presented in Figures 2.10 through 2.14. The graphs describe a best-case scenario for the potential effect of the Capstone system. When we estimate whether the avionics were likely to have been helpful, we assume that all planes operating under FAR parts 91, 135 and 121 would be equipped with Capstone avionics. This exaggerates the potential effect of Capstone since many planes operating under part 91 would not be equipped.

The Capstone system contains three separate components that assist pilots to avoid different types of hazardous conditions. We assumed that FIS-B would have been helpful for preventing weather-related accidents, that MFD/GPS would have been helpful for preventing terrain-related accidents, and that ADS-B would have been helpful for avoiding for collisions with other aircraft. Given these assumptions, we used information on phase of flight and text descriptions of accidents to analyze accidents, using a two-step process. First, we noted whether (1) weather was a factor (FIS-B), (2) the accident was terrain-related (MFD/GPS), (3) other aircraft were involved (ADS-B) and, (4) whether there were factors or causes for which the avionics would not have been helpful. Second, we grouped the results of step one into categories based on the likelihood that Capstone avionics might have prevented the accident. Accidents where the avionics would have been helpful for all causes and factors were coded "yes." Accidents where there was a mix of avionics-related and other causes were coded "possibly." Accidents where the avionics were not related to the causes were coded "no."

Decision Rules and Assumptions

ADS-B The midair collisions and collisions with other aircraft on the ground are coded as ADS-B relevant.

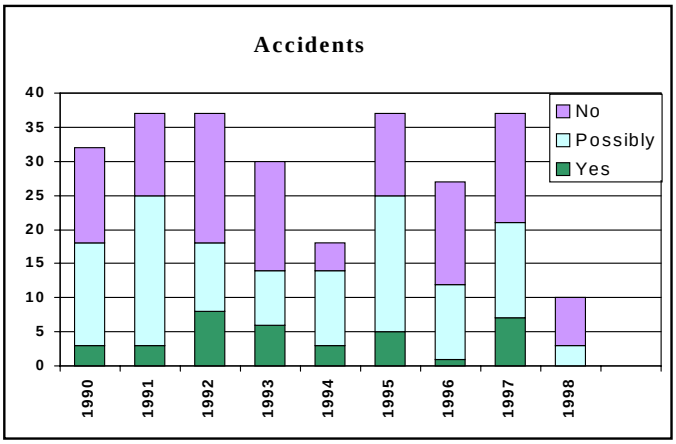
FIS-B This includes VFR into IMC. We also put weather related take-off and landing accidents at non-tower airports and remote sites and all weather related landings in this group. We used the assumption that pilots would have better area-wide weather information and might have made other decisions.[5] These (weather-related) accidents also had other non-avionics causes. We did not include take-offs from tower airports. We assumed that pilot had adequate weather information.

MFD/GPS This includes CFIT accidents. We also included some accidents where the pilot did not have sufficient altitude. We assumed that pilots would not have flown at a low altitude if avionics could have told them where they were[5]. Also in this group are some forced landings. The assumption is that the pilot would have had better information about alternative landing sites[5]. The latter two categories also had non-avionics causes. We did not include low altitude flights where the accident was associated with spotting game.

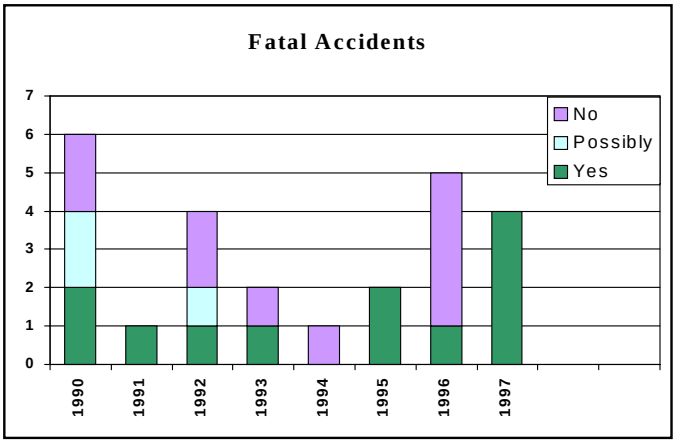
[4]Although we have counts of accidents and incidents through 1999, complete accident reports from the NTSB are available only through October 1998. Appendix A contains text summaries and coding of accidents in the Capstone area.

[5] Based on discussions with FAA staff (6/00).

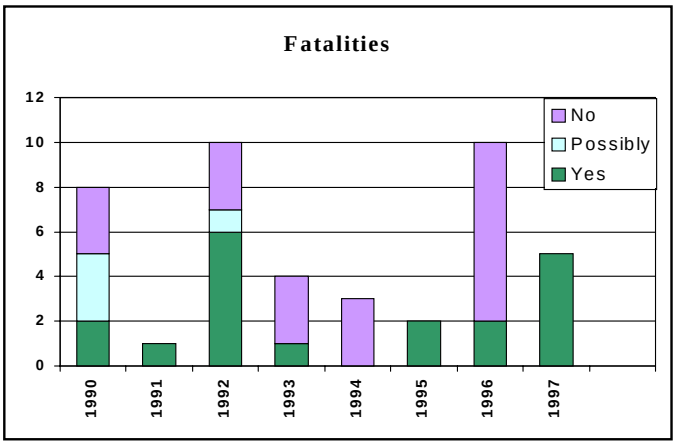
Figure 2.10. Would the Capstone Program Have Helped Pilots Avoid Accidents? Aviation Accidents in the Capstone Area, by Year, 1990-98



Capstone avionics are unlikely to be helpful for a large share of accidents. The avionics would have been helpful for between 1 and 8 accidents per year in the 1990s.



The number of fatal accidents in the Capstone area between 1990 and 1998 ranged from 1 to 6 per year. Of these, there were 0 to 2 per year for which Capstone avionics would have been helpful. These are small numbers, and we will need to do careful analysis to be able to attribute a drop in the "yes" category to the avionics.

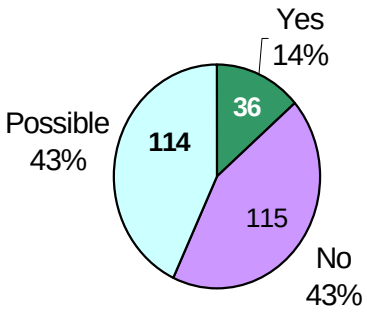


The number of fatalities in the Capstone area ranged from 1 to 10 between 1990 and 1997. There were 0 to 6 fatalities per year for which Capstone avionics would have been helpful.

Source: NTSB (1998) Accident and Incident Database. We used information on phase of flight and event descriptions to estimate whether Capstone avionics are likely, possibly likely or unlikely to be relevant to the event. We do not have complete data for 1998. 1998 data cover the period from 1/1/98 through 9/15/98.

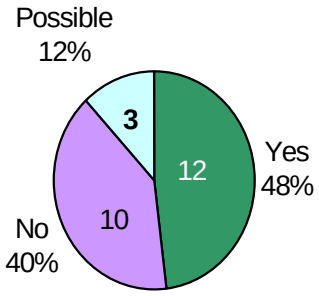
Figure 2.11. Would the Capstone Program Have Helped Pilots Avoid Accidents? Aviation Accidents in the Capstone Area, Total, 1990-98

Accidents



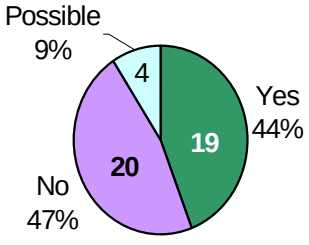
In 14% of all accidents Capstone avionics would have helped the pilot. In 43% of all accidents, the avionics would not have been helpful.

Fatal Accidents



The share of fatal accidents where Capstone avionics would have been helpful is much higher (48%) than accidents overall (14%).

Fatalities

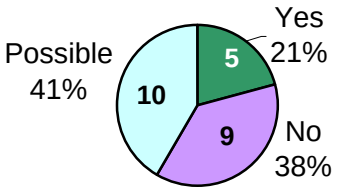


In the Capstone area there were no fatalities on scheduled 121 or commuter flights. We estimate that Capstone avionics would have been helpful for 44% of fatalities.

Source: NTSB (1990-98) Data for 1998 cover the period from 1/98 to 9/15/98.
We included FAR part 91, 135 and 121 flights.

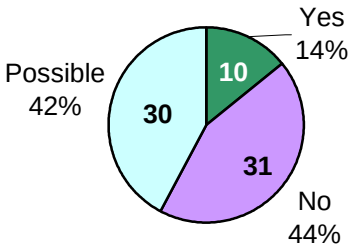
Figure 2.12. Would the Capstone Program Have Helped Pilots Avoid Accidents?
Aviation Accidents in the Capstone Area, Total, 1990-98
by FAR Part Number

Commuters



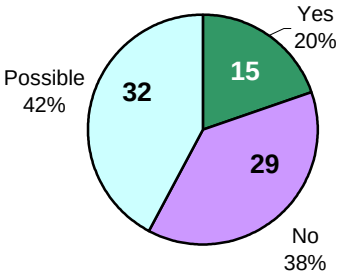
Among different categories of commercial flights, there is little difference in the proportions of accidents that Capstone equipment would have helped.

Air Taxis

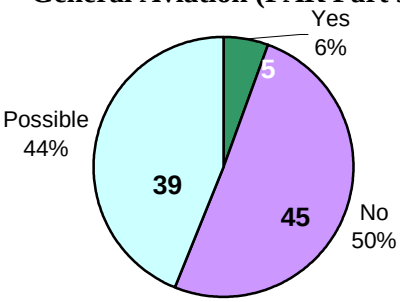


Air Taxis and commuters, that is, part 135 operators on unscheduled flights, had more accidents than scheduled commuter flights, and thus more accidents that Castone equipment might have prevented.

Part 135 Operators Flying under Part 91



General Aviation (FAR Part 91)

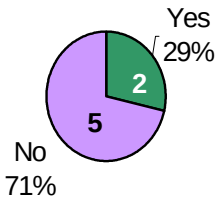


General aviation accidents were less likely than commercial flights to have been caused by factors that the Capstone equipment might mitigate.

NTSB (1990-98) Data for 1998 cover the period from 1/98 to 9/15/98.

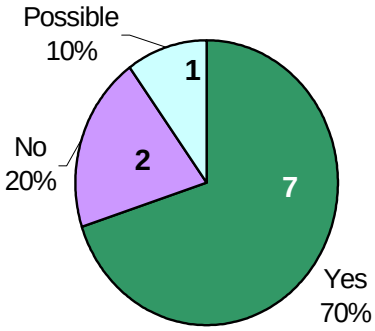
Figure 2.13. Would the Capstone Program Have Helped Pilots Avoid Fatal Accidents?
Fatal Accidents in the Capstone Area, 1990 - 1998
by FAR Part Number

Air Taxis



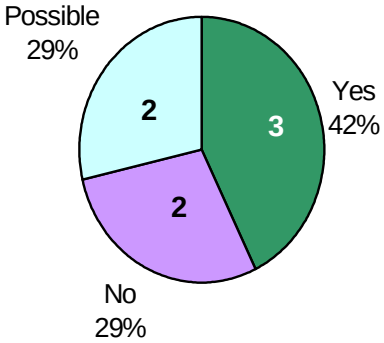
There were no fatal accidents involving commuters during the period.

Part 135 Operators Flying under Part 91



Many of the accidents where avionics would not have been helpful involved mechanical failures, overloaded airplanes, or were on game spotting flights.

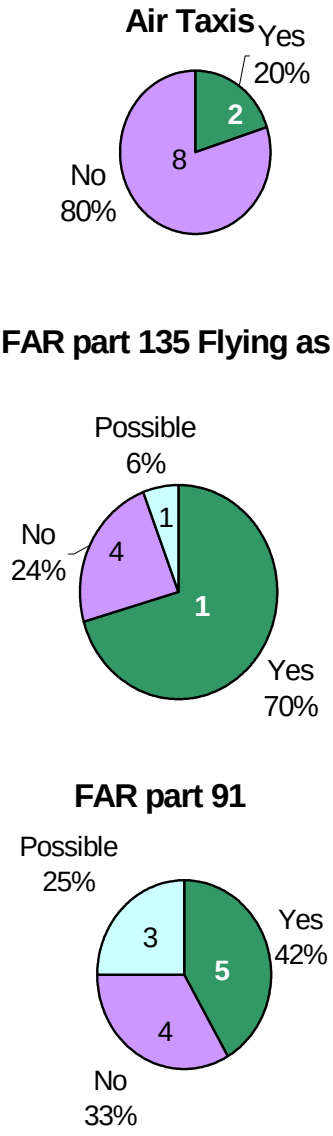
General Aviation (FAR Part 91)



The total number of fatal accidents is too small to make any predictions about what type of flight is most likely to benefit from Capstone equipment during the study period.

NTSB (1990-98) Data for 1998 cover the period from 1/98 to 9/15/98.

Figure 2.14. Would the Capstone Program Have Helped Pilots Avoid Fatalities?
Fatalities in the Capstone Area, 1990 - 1998
by FAR Part Number



NTSB (1990-98) Data for 1998 cover the period from 1/98 to 9/15/98.

3. Commercial Operations

Information on Capstone operators in this section is taken from the FAA's Vital Information System (VIS) current as of October 1999, from the *Capstone Avionics Installation Program* report (http://www.alaska.faa.gov/capstone/docs/AVINSTAL.PDF), and from the FAA's program status section of the Capstone web site, http://www.alaska.faa.gov/capstone/status.htm. The scope of operations and in some cases the operators themselves flying in the Capstone area and those involved in the Capstone program change over time. In addition, the number of pilots and aircraft that an operator flies in the Capstone area may be quite different from their total employment and total aircraft owned. We have noted where information refers to a company's Bethel area operations, and where it refers to the company as a whole.

3.1. Air Carriers and Commercial Operators

In December 1999 the Capstone office issued which listed 23 operators they hoped would participate. Four more potential operator participants were identified during the following year. By the fall of 2000, 19 operators were participating[6] in the Capstone program. Of those, 16 were among the operators originally identified for the project and three of the four operators identified later were also participating. Seven of the operators identified in December 1999 and one of the added operators were not yet participating in the Capstone program as of December 2000.

The 23 operators included in the Capstone project in December 1999 as well as the four additional operators now participating are listed in Table 3-1. These carriers account for most commercial flights in the Capstone area. Nine of these operators have their main office presence in Bethel, eight in Anchorage, five in Fairbanks, and four in smaller communities. In addition, these operators fly to most airports in the Capstone area, as well as some places outside the area. During the course of the Capstone project, we expect this list to change again, as some operators may go out of business or decline to continue their participation, and others that initially declined may decide to participate.

[6] By 'participating' in December 2000, we mean that these operators had trained pilots on Capstone, had installed equipment, or were in the process of scheduling pilot training or equipment installation. As of December 2000, 73 aircraft were equipped with Capstone avionics, 69 of which belonged to 18 commercial operators, 1 to the FAA, 1 to UAA and 2 to the federal government. Two of the participating operators shown in the table did not have any completed avionics installations by December 2000.

Table 3-1. Capstone Operators and Facility Locations, October 1999

Company Name	Original or Added Later?	Participation Status	Main Office	Facility Locations
Alaska Central Express	Original	No	Anchorage	Anchorage, Bethel
Arctic Circle Air Service Inc.	Original	Yes	Fairbanks	Anchorage, Bethel
Arctic Transportation Services Inc.	Original	Yes	Anchorage	Anchorage, Bethel
BellAir, Inc[7].	Added	No	Fairbanks	Bethel
Dean Hilde DBA Cub Drivers	Original	Yes	Anchorage	Fairbanks, Aniak, Bethel
Emery, Craig A. (Craig Air)	Original	Yes	Bethel	Fairbanks, Bethel
ERA Aviation	Original	No	Anchorage	Fairbanks, Bethel
Frontier Flying Service	Added	Yes	Fairbanks	Bethel
Grant Aviation	Original	Yes	Bethel	Anchorage, Bethel
Hageland Aviation Services Inc.	Original	Yes	Bethel	Bethel
Hangar One Air Inc.	Original	No	Bethel	Emmonak, Bethel
Inland Aviation Services Inc.	Original	No	Aniak	Anchorage, Bethel
Kusko Aviation Inc.	Original	Yes	Bethel	Bethel
Kuspuk School District	Original	No	Aniak	Aniak, Bethel
Larry's Flying Service Inc.	Original	Yes	Fairbanks	Bethel
Neitz Aviation Inc.	Original	Yes	Bethel	Bethel
Northern Air Cargo	Added	Yes	Anchorage	Statewide
Peninsula Airways (PNSA)	Original	Yes	Anchorage	Bethel
Ptarmigan Air	Original	Yes	Anchorage	Red Devil
Shade Aviation[8]	Added	Yes	Dillingham	See note
Tanana Air Service	Original	Yes	Fairbanks	Bethel
Townsend, Richard A.	Original	No	Aniak	Bethel
Vanderpool, Sr., Robert W.	Original	No	Red Devil	Bethel
Village Aviation (Camai)	Original	Yes	Bethel	Anchorage, Bethel
Walters, George (G&L Air Service)	Original	Yes	Bethel	Bethel
Yukon Helicopters Inc.	Original	Yes	Bethel	Anchorage, 47 Mile
Yute Air Alaska, Inc.	Original	Yes	Anchorage	Anchorage

Source: FAA Vital Information System, 10/22/99

[7] Bellair has expressed interest in participating, and pilots were interviewed in the Pilot Baseline Survey. However, As of January 2001, they were not yet participating in Capstone.

[8] Shade Aviation is an aircraft leasing company based in Dillingham that leases aircraft to operators in the Bethel area.

3.2. Employees

The majority of the Capstone operators are very small. Information in table 3-2 refers to the 23 operators originally identified for the project, and includes all employees, not just those based in Bethel. Almost half (11) have five or fewer employees and six are one-person operations. The three largest firms, however, each employ more than 100 persons, including not only pilots but also flight attendants, dispatchers, maintenance personnel and others. Many of the Capstone operators fly outside as well as within the Capstone area. shows all employees (taken from the VIS) rather than attempting to identify those employees involved in Capstone are operations.

Table 3-2 Selected Employee Totals by Type, Capstone Operators, October 1999

Type of Employee	Number
Pilot In Command	394
Certified Pilot Examiners	301
Designated Pilot Examiner	113
Pilot Examiner	2
Check Airmen	54
Pilots Other Than PIC Or Check Airmen	82
Flight Attendants	26
Dispatchers	14
Maintenance	56
Total Employees (including categories not listed separately)	1604

Source: FAA Vital Information System, 10/22/99

3.3. Aircraft as of October 1999

The 23 originally identified Capstone operators own 157 aircraft: 112 single-engine land aircraft, 43 multi-engine land, 6 multi-engine sea and one single-engine sea. This doesn't reflect seasonal changes, as seaplanes may be converted to land or ski aircraft for the winter season. Three quarters (116) are piston engine and 41 are turbine; 90 are certified for IFR flight. There is one helicopter.

Nine are configured for cargo only and don't carry passengers; of the remaining 148, the largest carries 19 passengers, the smallest (a Piper Cub), only one. Sixty percent carry from 6 to 9 people. Aircraft owned by Capstone operators are capable, in total, of carrying over 1,000 passengers. This overstates the actual passenger capacity in the area, however, as it includes some aircraft that are operating outside the Capstone area.

Table 3-3. Number of Capstone Operator Aircraft by Type of Aircraft, Make and Model, October 1999

		Type of Aircraft				
MAKE	MODEL	Single Engine Land	Single Engine Sea	Amphibious	Multi Engine Land	Helicopter
BEECH	200				1	
	1900				6	
BHT						1
CASA	212				2	
CESSNA	172	9				
	180	1				
	182	1				
	185	6				
	206	4				
	207	54				
	208	12				
	402				2	
	441				2	
DEHAVILLAND	DHC-2	1	1			
	DHC-6				8	
GRUMMAN	G			6		
METRO	SA-				6	
PIPER	PA-31	5			9	
	PA-32	16				
	PA-18	3				
REIMS	F406				1	
Total		112	1	6	37	1

Source: FAA Vital Information System, 10/22/99

Table 3-4. Passenger Capacity of Capstone Operator Aircraft by Type of Aircraft, Make and Model, October 1999

		Type of Aircraft				
MAKE	MODEL	Single Engine Land	Single Engine Sea	Amphibious	Multi Engine Land	Helicopter
BEECH	200				9	
	1900				0	
BHT	206					4
CASA	212				0	
CESSNA	172	23				
	180	3				
	182	0				
	185	15				
	206	17				
	207	249				
	208	108				
	402				9	
	441				18	
DEHAVILLAND	DHC-2	1	6			
	DHC-6				149	
GRUMMAN	G			54		
METRO	SA-				114	
PIPER	PA-31	45			81	
	PA-32	95				
	PA-18	3				
REIMS	F406				9	
Total		559	6	54	389	4

Source: FAA Vital Information System, 10/22/99

3.4. Avionics in Capstone Operator Aircraft as of October 1999

The information on avionics in Capstone operator aircraft during the baseline and prior to Capstone equipment being installed is based on data from the VIS dated 10/22/99, photos taken of avionics panels prior to install, operator interviews and interviews with avionics installers.

The avionics suites in Capstone operator aircraft vary widely from the minimum required for night VFR to full IFR panels with redundant systems. The minimum equipment is in a Cessna 172 listed in operations specifications as an air carrier aircraft for day and night VFR operations. It is equipped with a single Nav/Com 360 channel Com with VOR receiver and a Loran C. The most equipment is in a DHC-6 twin otter listed as an air carrier aircraft for IFR operations and operations in known and forecast icing as well as day and night VFR. This aircraft is also in compliance with FAR 119 and 121 as a commuter aircraft capable of hauling more than 10 passengers and is

dispatched under FAR 121. Its avionics include dual 720 channel Com, dual VOR receivers with ILS and LOC capability, dual DME receivers, dual ADF receivers, dual GPS navigators, dual transponder, radar altimeter, weather radar, GPWS and TCAS1.

The aircraft that are listed in the baseline as VFR aircraft generally have radio packages using navigation equipment that is not certified for IFR operations. In most cases the equipment is the original delivered with the aircraft and so is at least 20 years old. Operators also install radios in the aircraft that do not meet any FAR requirements and are there for company convenience. These are typically CB radios or marine radios used to talk to station agents in the villages.

4. Capstone Area Aviation Facilities

4.1. Airport Facilities

There are 110 aviation landing facilities in the Capstone area. These include 96 airports, 13 seaplane bases and one heliport. The great majority – 93 or 85 percent- are available for public use. The State of Alaska owns most landing facilities (72 of the 110). Tables 4.1 and 4.2 below summarize the type and ownership of aviation landing facilities in the Capstone area; Appendix B gives a full list.

Table 4-1. Aviation Landing Facilities in the Capstone Area by Ownership and Type

	Public or Private Use?		
Type of Facility	Private	Public	Total
Airport	16	80	96
Heliport		1	1
Seaplane Base	1	12	13
Total	17	93	110

Source: FAA Forms 5010, compiled by GCR, Associates as the FAA 5010 database, http://www.gcr1.com/

Table 4-2. Airports in the Capstone Area by Ownership and Public Availability

	Public or Private Use?	
Owner	Open to Public Use	Closed to Public Use
Private Owners	7	10
Public Domain	11	1
Local Government	1	
State of Alaska	71	1
United States Government	3	5
Total	93	17

Source: FAA Forms 5010, compiled by GCR, Associates as the FAA 5010 database, http://www.gcr1.com/

Most of these airports are simply a single runway with minimal navigation aids, weather monitoring, or services. Only Bethel has an air traffic control tower. The majority are unattended, and of those attended, most are during daylight hours only.

Table 4-3. Airport Lighting at Capstone Area Airports

Lighting	Number of Airports
24 Hrs	2
Dusk-Dawn	25
Radio Controlled	15
Radio Request	3
None	65
Total	110

Source: FAA Forms 5010, compiled by GCR, Associates as the FAA 5010 database, http://www.gcr1.com/

Table 4-4. Services Available at Capstone Area Airports

Fuel			
	Yes	No	
Fuel Available?	13	97	
Repairs			
	Major	Minor	None
Airframe Repairs	3	7	100
Powerplant Repairs	2	7	101

Source: FAA Forms 5010, compiled by GCR, Associates as the FAA 5010 database, http://www.gcr1.com/

4.2. Runway Characteristics

The 96 airports have 113 runways; the 13 seaplane bases have 32 runways. Airport runways are predominantly gravel, and relatively short. Only six communities have paved runways Aniak, Bethel, Dillingham, Hooper Bay, King Salmon, and McGrath. Two of these communities have two paved runways, for a total of only eight paved runways in the Capstone area. Runways range in length from 600 feet (Kvichak/Diamond J) to 8,500 (King Salmon). Water runways range from 1400 feet (Shannon's Pond, Dillingham) to 15,000 feet (Napaskiak). Runway lengths and surface are included in the list of airports in Appendix B.

Table 4-5. Type of Runway, Capstone Area Airports and Seaplane Bases

	Number	Percent of Land Runways
Asphalt	8	7%
Gravel	85	75%
Dirt or Gravel-Dirt	17	15%
Turf or Turf-Gravel	3	3%
Total Land	113	100%
Water	32	
Total Runways	145	

Source: FAA Forms 5010, compiled by GCR, Associates as the FAA 5010 database, http://www.gcr1.com/

Table 4-6. Length of Runways, Capstone Area Airports

Length	Number of Runways	Percent of Runways
<1,000'	7	6%
1,000' - 1,999'	36	32%
2,000' - 2,999'	33	29%
3,000' - 3,999'	19	17%
4,000' - 4,999'	11	10%
5,000' and longer	7	6%
Total	113	100%

Source: FAA Forms 5010, compiled by GCR, Associates as the FAA 5010 database, http://www.gcr1.com

Table 4-7. Width of Runways, Capstone Area Airports		
Width	Number of Runways	Percent of Runways
<25’	2	2%
25’-49’	30	27%
50’-74’	36	32%
75’-99’	22	19%
100’ and wider	23	20%
Total	113	100%

Source: FAA Forms 5010, http://www.gcr1.com/

4.3. Instrument Approaches

Seven of the Capstone area airports have some form of instrument approach. In addition, stand-alone GPS approaches are proposed for at least 23 more.

Table 4-8. Instrument Approaches to Public Use Airports in the Capstone Area

Airport name	Runway Number	ILS/ DME	VOR/ DME	LOC/ DME	NDB/ DME	ILS	GPS	VOR	NDB	MLS	LOC	TACAN
Aniak	10	YES		YES			YES					
	28				YES		YES					
Bethel	18	YES	YES				YES	YES	YES			
	36		YES	YES			YES	YES		MLS		
Dillingham	1						YES	YES	YES	MLS		
	19		YES	YES			YES					
King Salmon	11					YES	YES	YES	YES			YES
	29		YES				YES					YES
McGrath	16		YES	YES			YES	YES	YES			YES
St Mary's	16			YES	YES		YES		YES			
	34						YES		YES			
Unalakleet	14		YES				YES		YES		YES	YES

Source: Index of Terminal Charts and Minimums

Table 4-9. Airports in the Capstone area for which GPS Approaches are Currently Proposed

Chefornak	Kwigillingok	Russian Mission
Chevak	Manokotak	Scammon Bay
Egegik	Marshall	Sleetmute
Holy Cross	Mountain Village	St. Michael
Igiugig	New Stuyahok	Stebbins
Kalskag	Nikolai	Toksook Bay
Kipnuk	Platinum	Tununak
Koliganak	Red Devil	

Source: Alaska DOT&PF, Statewide Aviation

4.4. FAA Facilities

The FAA has contract tower facilities in Bethel and King Salmon, one year-round flight service station (FSS) in Dillingham, and a seasonal FSS in McGrath. There is also a seasonal FSS in Iliamna, which is at the eastern edge of the Capstone area. All these facilities provide services to pilots, including weather briefings and traffic control (Bethel tower) or traffic management (the flight service stations).

4.5. Communications Facilities

Communications for pilots flying in the Capstone area are provided by the facilities (FSS and towers) and by remote communications outlets (RCOs), remote tower relays (RTRs), and remote communications air to ground facilities (RCAGs). The FAA's *Pilot/Controller Glossary* describes these facilities as follows:

> REMOTE COMMUNICATIONS OUTLET- An unmanned communications facility remotely controlled by air traffic personnel. RCO's serve FSS's. REMOTE TRANSMITTER /RECEIVERS (RTR's) serve terminal ATC facilities. An RCO or RTR may be UHF or VHF and will extend the communication range of the air traffic facility. There are several classes of RCO's and RTR's. The class is determined by the number of transmitters or receivers. Classes A through G are used primarily for air/ground purposes. RCO and RTR class O facilities are nonprotected outlets subject to undetected and prolonged outages. RCO (O's) and RTR (O's) were established for the express purpose of providing ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency.
>
> REMOTE COMMUNICATIONS AIR/GROUND FACILITY- An unmanned VHF/UHF transmitter/receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. RCAG facilities are sometimes not equipped with emergency frequencies 121.5 MHz and 243.0 MHz.

Table 4.10 lists the locations of these facilities in the Capstone area.

Table 4.10. Communications Facilities in the Capstone Area	
Remote Communications Air Ground (RCAG) Locations	
Aniak	King Salmon
Bethel	Mcgrath
Cape Newenham	Sparrevohn
Cape Romanzof	St Marys
Dillingham	Unalakleet
Remote Communications Outlet (RCO) Locations	
Akhiok*	Kipnuk
Aniak	Koyuk
Anvik	Koyukuk
Bethel	Mcgrath
Cape Newenham*	Mekoryuk
Cape Romanzof*	Mountain Village
Chefornak	Platinum
Dillingham	Quinhagak
Emmonak	Sparrevohn*
Farewell	St Marys
Hooper Bay	St Michael
Iliamna	Stebbins
Kalskag	Tatalina*
Kaltag	Togiak
Kemuk	Unalakleet
King Salmon	
Remote Transmitter/Receiver (RTR) Locations	
King Salmon	Bethel

* denotes type “O” RCOs

Source: FAA Maintenance Management System Facilities Master File
Special Facilities Report R600019 02/25/99 16:31:36

4.6. Weather Reporting Facilities

The weather data available for the Capstone area is limited, both by the number of reporting stations and by the quality of data they report. Several different organizations compile historical weather data:

1. The National Weather Service (formerly the U.S. Weather Bureau), in cooperation with the U.S. Army Corps of Engineers, and the Institute of Agricultural Sciences, University of Alaska
2. The Environmental Data Service and Air Weather Service of the US Air Force
3. The Alaska Weather Almanac
4. NOAA records of historical weather (the Alaska Climate Data Center contains archives of NOAA weather observations for all locations in Alaska from 1992 to the present.)

The quality of data from any of these sources depends on the type of reporting station. In the Capstone area, there are a number of different station types (see Tables 4-11 and 4-12), but most airports have no reporting stations.

- FAA NWS-trained observers at flight service stations and towers (FAA). Many have been replaced by automated weather stations during some hours of the day or have been eliminated entirely. In the Capstone area, only Bethel provides this level of weather information.
- Supplemental Aviation Weather Reporting Service (SAWRS) are paid for by air carriers and so are available for only limited periods of time, typically 2 hours before until 1 hour after scheduled flight operations.
- Automated sites:

  Automated Meteorological Observation Station (AMOS)

  Automated Surface Observation System (ASOS)

  Automated Weather Observation System (AWOS). All three types of automated sites (AMOS, ASOS, and AWOS) report visibility but do not report what phenomena might be obscuring it. For example, one half-mile visibility could result from snow or fog or some other weather condition that we would be unable to determine.

  A-Paid stations are non aviation weather remotely reported to NWS for forecasting. These stations gather supplemental weather data at remote locations like lodges to assist the NWS in developing forecast models. A-Paid sites may be of interest to aviators if they are in mountain passes and report visibility.

  Military observed and recorded weather (MIL) is very limited, with observations only during daylight hours and only on days with planned flight activity. Consequently, some locations have as few as 8 observations per month.

Table 4-11. Capstone Area Weather Facilities by Type	
Type of Facility	Number in the Capstone Area
NWS and FAA 24 hrs.	1
AWOS; SAWRS Backup	2
AWOS	9
AWOS (military)	3
ASOS	2
SAWRS	3
None	90

Source: FAA, Fairbanks AFSS, http://www.alaska.faa.gov/fai/afss/awosasos.htm

Table 4-12. Weather Stations in the Capstone Area		
Location	**Station Identifier**	**Type of reporting**
Aniak	PANI	AWOS; SAWRS Backup
Anvik	PANV	AWOS
Bethel	PABE	NWS and FAA 24 hrs.
Cape Newenham	PAEH	MIL (AWOS)
Cape Romanzof	PACZ	MIL (AWOS)
Chefornak	PACK	SAWRS
Dillingham	PADL	AWOS
Egegik	PAII	AWOS
Emmonak	PAEM	AWOS
Hooper Bay	PAHP	AWOS
Iliamna*	PAIL	ASOS
Kaltag*	PAKV	ASOS
King Salmon	PAKN	ASOS
Kipnuk	PAKI	SAWRS
McGrath	PAMC	ASOS
Mekoryuk	PAMY	AWOS
Newtok	PAEQ	SAWRS
Sleetmute	PASL	AWOS
Sparrevohn	PASV	MIL (AWOS)
St. Mary's	PASM	AWOS; SAWRS Backup
Togiak	PATG	AWOS
Unalakleet	PAUN	AWOS
Source: NWS at http://www.alaska.net/~nwsar/station-identifiers.html, 13 Mar 00		

* There are 22 facilities on this list. Iliamna and Kaltag are on the Capstone area boundary. Although they are outside the Capstone area, their weather reports can be valuable to pilots in the area

Almost all the current weather observations in the Capstone area are from automated weather stations. Bethel is the only staffed full-time weather station in the area that reports all elements of weather of interest to aviation. In addition, there are 14 AWOS stations, of which 3 are military, and 2 have SAWRS back-up. There are 2 ASOS and 3 SAWRS stations, and two additional ASOS stations just outside the Capstone area, for a total of 22 locations with some level of weather reporting. Historical data can also include the observations from NWS and FAA weather observers formerly assigned to the flight service stations in Unalakleet, McGrath, and Dillingham. Those historical observations will include more detail on weather affecting aviation. Table 4-12 summarizes weather stations within and bordering the Capstone area.

4.7. Navigation Facilities in the Capstone Area

Table 4-13 summarizes navigation facilities available to aviators in the Capstone area.

Table 4-13. Navigation Facilities in the Capstone Area

Name	Ident	Kind	Range	Lat	Long
Aniak	ANI	NDB	High & Low Level	61N	-159W
Bethel	ET	NDB	Terminal	60N	-161W
Cairn Mountain	CRN	NDB	High & Low Level	61N	-155W
Cape Newenham	EHM	NDB	High & Low Level	58N	-162W
Cape Romanzof	CZF	NDB	Low Level	61N	-165W
Farewell Lake	FXW	NDB	Low Level	62N	-153W
Oscarville	OSE	NDB	Low Level	60N	-161W
Saint Marys	SMA	NDB	High & Low Level	62N	-163W
Saldo	AK	NDB	High & Low Level	58N	-156W
Takotna River	VTR	NDB	Low Level	62N	-155W
Wood River	BTS	NDB	Terminal	58N	-158W
Anvik	ANV	NDB-DME	Low Level	62N	-160W
Iliamna	ILI	NDB-DME	High & Low Level	59N	-154W
Nanwak	AIX	NDB-DME	Low Level	60N	-166W
Togiak	TOG	NDB-DME	Low Level	59N	-160W
Dillingham	DLG	VOR-DME	High & Low Level	58N	-158W
Emmonak	ENM	VOR-DME	High & Low Level	62N	-164W
Hooper Bay	HPB	VOR-DME	High & Low Level	61N	-166W
Kipnuk	IIK	VOR-DME	High & Low Level	59N	-164W
Sparrevohn	SQA	VOR-DME	High & Low Level	61N	-155W
Bethel	BET	VORTAC	High & Low Level	60N	-161W
King Salmon	AKN	VORTAC	High & Low Level	58N	-156W
McGrath	MCG	VORTAC	High & Low Level	62N	-155W
Unalakleet	UNK	VORTAC	High & Low Level	63N	-160W

Source: Falling Rain Genomics, Inc., 'http://www.fallingrain.com/air/cache/geo/USAK/nav.html

5. Safety programs

5.1. FAA Requirements

Air carrier safety programs vary from extensive systems of procedures and training requirements to one-page statements of safety goals. Requirements for safety vary according to what federal aviation regulations (FARs) govern the flights a carrier operates. All but four of the 23 Capstone operators are governed by FAR part 135; two operate flights under both part 135 and 121, and two operate exclusively under part 121.

In 1995, the FAA began issuing FAR 119, which in part addresses management safety positions required for air carriers. FAR 119.65 and FAR 119.67 (part of amendment 3 dated March 17, 1997) included the requirement for a director of safety for air carriers operating under FAR 121. However, there is no definition of qualifications for the position and there is no requirement for the position under FAR 135. Thus only four of the Capstone operators are required to have directors of safety.

Table 5.1. Capstone Air Carriers By Type

FAR 121 Operators	2
FAR 135 Operators	19
FAR 121/135 Operators	2

Source: FAA

5.2. Capstone Operator Safety Programs

The four carriers that operate at least partially under FAR 121 have directors of safety listed in their Operations Specifications and have some safety programs outlined in their operations manual. These four have implemented these positions in varying ways.

One of these carriers operates under supplemental rules only. Its director of safety also serves as a line captain and check airman and says he dedicates less than 10% of his duty time explicitly to safety. His assessment of the situation is that the director of safety position has been filled to satisfy the FAA. As a Supplemental Air Carrier this carrier does not require dispatchers and therefore does not have a check and balance system for flight release.

Another carrier operates under domestic rules with supplemental authority for charters. All flights, regardless of the rules they operate under, operate with the benefit of a certificated aircraft dispatcher. The director of safety is a full-time position. He investigates pilot reports of hazardous conditions involving flight operations as well as ground operations involving aircraft and equipment. He makes recommendations to management for changes and conducts monthly safety meetings. In addition, this carrier has a safety and standards committee for flight operations that meets regularly to discuss crew performance.

The third carrier operates under domestic rules and uses certificated aircraft dispatchers. Because this company is small, it does not dedicate a person to the director of safety position full time. However, the director estimates that he spends at least 50% of his time on safety duties. The position does have defined duties that include hazard report investigation.

The fourth carrier also operates under domestic rules and uses certificated aircraft dispatchers. Its director of safety is full time in the position. He investigates both ground and flight

operations, makes recommendations to management and coordinates with FAA, DOT, and OSHA inspectors who review company procedures. This company also uses a risk assessment tool in its GO/NO GO decisions for all its operations.

None of the 19 carriers that operate only within FAR part 135 have director of safety positions – it's not required – and few have defined safety programs in their operations manuals. Some part 135 operators in the Capstone area are single pilot owner operators and as such have minimal manual and personnel requirements.

One carrier does have a defined safety program in its manual. The program includes annual review of accidents and incidents involving its aircraft and those of other similar air carriers. This review is included as part of pilots' annual recurrent training. Another carrier has a program under development. For another carrier, there is no written safety program, but it does have regular meetings with the pilots. Yet another carrier reports its only safety program as "hiring the right guy to start with."

6. FAA Surveillance

The Federal Aviation Administration, Alaska Region has two Flight Standards District Offices (FSDOs) with geographic areas of responsibility that include operators in the Capstone area: FSDO-03 in Anchorage and FSDO-01 in Fairbanks. Each FSDO assigns air carrier safety inspectors to each operator in its area of responsibility. The inspectors cover operations, airworthiness and avionics, and may be assigned only one air carrier or a number of air carriers, depending on the size and complexity of those carriers.

As Bethel is the focal point of aviation activity in the Capstone area, inspectors from Fairbanks or Anchorage travel to Bethel to provide Capstone area surveillance. While there is no set schedule, a typical week is as follows:

Monday:

An inspector will fly from Anchorage to Bethel. He or she will ride in the cockpit of an air carrier providing scheduled service to Bethel and conduct an en route inspection of that carrier at that time.

Tuesday, Wednesday and Thursday:

The inspector may conduct 135 check rides and visit with any Bethel-based operator for which he or she has responsibility.

Friday:

The inspector will return from Bethel to Anchorage in the cockpit of a different scheduled air carrier and conduct an en route inspection of that carrier.

Based on pilot interviews and informal discussions with FAA inspectors, we learned there are usually one or two inspectors in Bethel Monday through Friday, but none on Saturday or Sunday. There is little surveillance beyond Bethel, especially since flights between Bethel and destinations in the Capstone area are predominantly in small single engine aircraft, with small payloads. Taking up a seat with a non-paying inspector would use a large percentage of the available payload for those flights and could cause a severe economic hardship for the operators.

The University of Alaska will work with the FAA to obtain PTRS (Program Tracking and Reporting System) data that will detail the exact level of surveillance during the Capstone test period.

7. Weather

7.1. Common Weather Hazards In Capstone Area

Aviation weather hazards in the Capstone area include several conditions that create poor visibility and low ceilings. We refer to the FAA's Advisory Circular 00-6A on aviation weather to define the common weather hazards. Historical weather reports allow us to estimate how frequently these hazards occur and how often the weather conditions approach operational limits as defined in FARs. However, as we will discuss below, historical and current weather data are often not complete enough for precise measurements of "how often" and "how much of the time."

Fog is a surface-based cloud composed of water droplets or ice crystals. Fog is the most frequent cause of surface visibility below 3 miles, and is one of the most common and persistent weather hazards encountered in aviation (AC 00-6A pg. 126). Two types of fog occur frequently in southwest Alaska. *Advection fog* forms when moist air moves over colder ground or water. It is most common along coastal areas (AC 00-6A pg. 127). *Ice fog* occurs in cold weather when the temperature is below freezing (AC 00-6A pg. 128). Sunshine during the day can warm the fog and lift fog layers off the surface or evaporate them; however, short daylight hours in the Capstone area during the winter mean that fog tends to persist.

Low stratus clouds may reduce ceilings below minimum safe levels. In many cases there is no real line of distinction between such clouds and fog; rather, one gradually merges into the other. Flight visibility may approach zero in stratus clouds (AC 00-6A pg. 128). High winds over snow-covered terrain create *blowing snow* that can reduce visibility to near zero at ground level, even under clear weather conditions (AC 00-6A pg. 130). Finally, *precipitation* in the form of rain, snow, drizzle, freezing drizzle and freezing rain commonly present ceiling and visibility problems.

7.2. Weather Variability

The Capstone area stretches from the foothills of the Alaska and Aleutian mountain ranges in the east, across the flat delta of the Yukon and Kuskokwim rivers to the Bering Sea coast on the west. The weather is extremely variable, especially toward the Bering Sea coast, where ceilings and visibility are often much worse than in Bethel. This is due to both the effects of the Bering Sea and the area's frequent storm systems. Since most of the scheduled airports do not have any weather reporting, dispatch decisions are made based on Bethel weather and the area forecast.

Table 7-1 shows examples of flight routes without en route or destination weather reports. All of these routes terminate in coastal communities where there are wide areas of advection fog due to moist air being moved onshore by normal cyclonic flow around lows and cooled by the colder ground. The results are destination weather that often has lower ceiling and visibility than reported at Bethel. With the cruising speed of 110 nautical miles an hour for the typical single-engine aircraft used in the Capstone area, aviators may be flying longer than one hour on some routes without the benefit of weather reports.

Table 7-1. Typical Capstone Routes Without En Route and Destination Weather Reports	
Route	Distance (nautical miles)
Bethel (BET) to Nightmute (IGT)	84
Bethel (BET) to Toksook Bay (OOK)	98
Bethel (BET) to Kwigillingok (AK85)	68
Bethel (BET) to Scammon Bay (SCM)	125
Bethel (BET) to Tuntutuliak (AK61)	37
Bethel (BET) to Chevak (VAK)	118

Source: Author's analysis

7.3. Weather Data Summary

We want to summarize the weather over a period of time, in order to later compare weather during the study period with weather during the baseline. Because we are interested in how the weather affects flight operations, we categorize the weather based on operational limits for flights under different rules.

IFR operations only Ceiling lower than 500' and visibility less than 1 mile.

Day special VFR minimums Ceiling 500' or higher and visibility 1 mile or greater.

Day en route VFR minimums Ceiling 500' or higher and visibility 2 miles or greater

Basic VFR Ceiling 1,000' or higher and visibility 3 miles or greater. (FAR 91.155)

Night VFR Ceiling 2000' or higher and visibility 3 miles or greater.

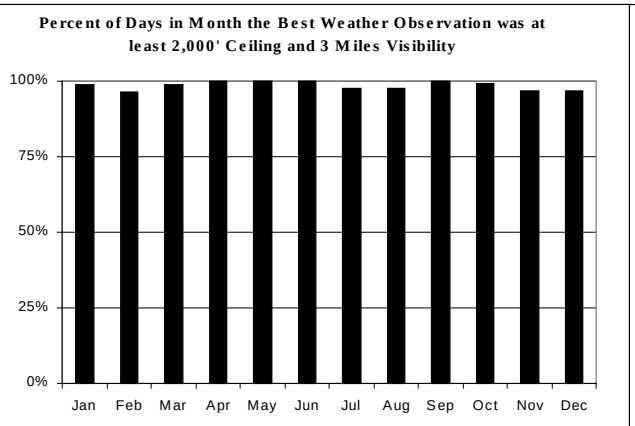
Bethel is the only station with 24 hour reporting, and therefore the only set of observations complete enough to summarize. Typically, there is an observation every hour. We divide the observations into day[9] time and night time, and identify the best and worst weather reported during each day and each night.

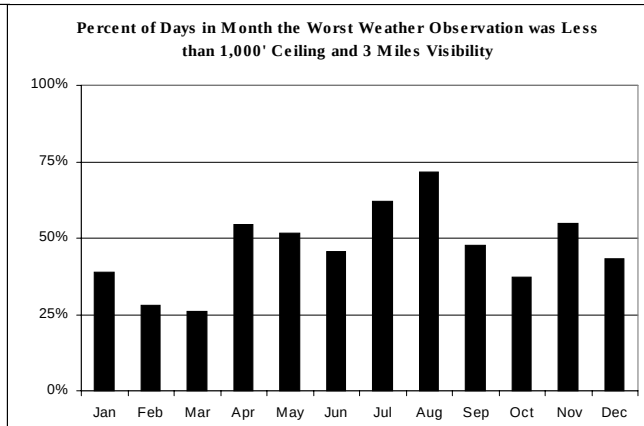
The charts on the following pages summarize the results of this process. Together they show how Capstone area weather varies not only by place, as discussed in section 7.2, but also by time. Figure 7.1 shows that while good weather is common in Bethel, bad weather is also common. About half of spring and summer days and one-quarter to one-third of fall and winter days have at least some time when the weather requires pilots to get a special VFR clearance to fly out of Bethel, or when instrument meteorological conditions (IMC) prevail. Figure 7.2 highlights this variability over time, by showing the percentage of days that the weather changes from visual meteorological conditions (VMC) to IMC[10]. About half of all days meet this criterion.

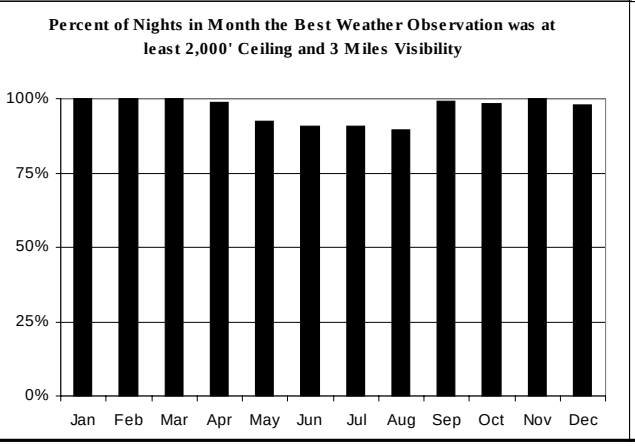
This means that it's common for the weather to change enough that pilots who take off from Bethel in VMC could encounter IMC not only as they travel towards the coast (section 7.2) but also on a local flight or on their return to Bethel, as the ceiling or visibility drops.

[9] "Day" begins at morning civil twilight, and ends at evening civil twilight; hours vary widely with the season. Figure 7.1 uses weather data from June 1996 to November 1999.
[10] Figure 7.2 looks at 1998 only, and day time (as defined above) only.

Figure 7.1. Frequency of Days With Periods of Good and Bad Weather







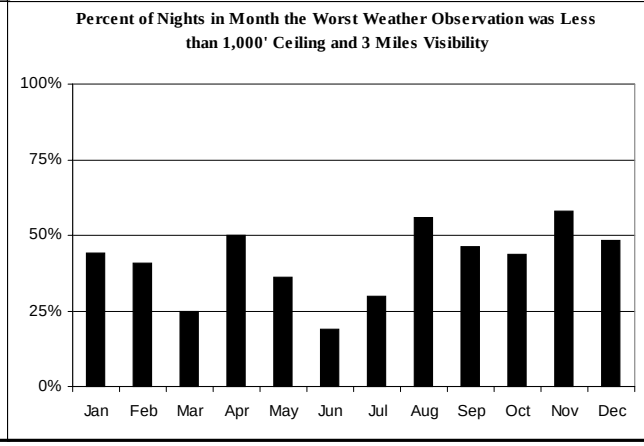
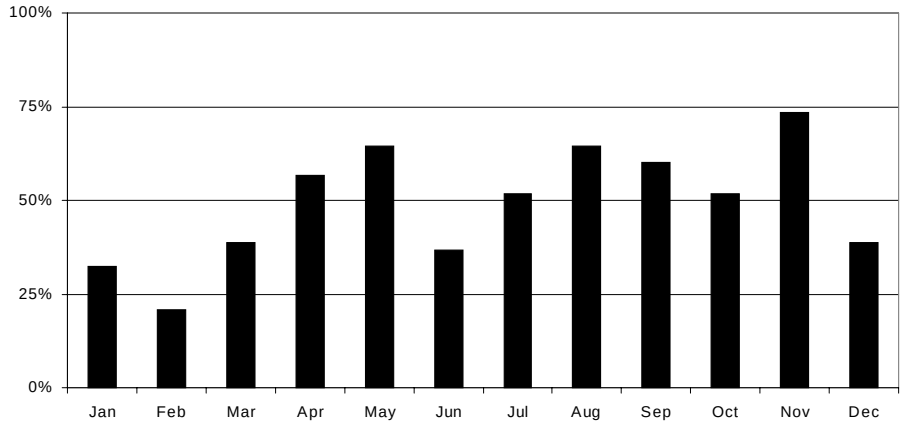


Figure 7.2 Percent of Days with Variable* Weather, Bethel, 1999



*Variable weather days defined as days on which the best weather observation met Basic VFR minimums of 1,000'ceiling, 3 miles visibility; worst weather observation did not meet Day En Route VFR minimums of 500' ceiling, 2 miles visibility

8. Baseline Pilot Survey

8.1. Purpose

To assess the effects of the Capstone program on air safety in the Y-K Delta, we need to control for other factors that might also affect safety in that area. Among those are changes in the qualifications and experience of Capstone area pilots during the study period. Substantial anecdotal evidence indicates that small air carriers throughout Alaska are having difficulty finding pilots and are therefore hiring less experienced pilots than they did in past years. To assess how pilot qualifications change over the study period, we needed current data as a baseline. We collected that and other important baseline data in a survey of Capstone area pilots in fall 2000.

We developed the survey questionnaire in cooperation with FAA, NIOSH, and other interested parties and surveyed both pilot-operators and pilot-employees. To insure that the safety study is as thorough as possible, we also asked pilots what they knew about safety hazards in the area. Finally, we also asked pilots' opinions about the training they need, about the Capstone equipment, and about aviation safety in the Y-K Delta.

Ideally, we would have surveyed pilots before any Capstone equipment was installed. But the difficulty of contacting pilots, the high pilot-turnover, and the necessity of giving pilots absolute assurance of confidentiality made it impossible to carry out the survey before the equipment was installed. The survey instrument is included as Appendix C.

8.2. Administration

To assure pilots that their employers supported the survey and to thus provide the best response rates, we worked through the Capstone operators to interview their pilots. First, Leonard Kirk (UAA Capstone project coordinator) introduced the interviewer, Dr. Wayne Daniels, (Human Factors representative in the UAA Capstone office) to the owner/operator, manager or chief pilot of each operator. Dr. Daniels explained the goals, importance, and strict confidentiality of the survey to this company representative, administered the survey, and secured permission to interview line pilots in that company. This typically occurred at the Bethel airport, although some interviews occurred at operator home bases in Anchorage or in Capstone training classes. We attempted to interview all the pilots available from the companies that gave permission. In Bethel, this meant all pilots who were working on the days Dr. Daniels was there. In training classes, we interviewed all the pilots present for training.

Although there was no formal random sampling process, we believe that the procedures we followed gave us the best opportunity for successfully obtaining interviews from a broad spectrum of pilots who are using Capstone equipment. Initially, many Bethel-area pilots and operators were reluctant to participate in the survey, and a few were openly suspicious that the data might be used for FAA enforcement actions. It was essential to build rapport with pilots and operators, and to administer the interviews face-to-face in order to answer questions, provide reassurance, and encourage the busy pilots to make enough time to complete the survey, which took from 20 minutes to 1 hour. Once rapport was established, and especially when companies were supportive, most pilots were willing to complete the interview.

Each interview began with the interviewer explaining the purpose and importance of the survey, identifying himself as part of the UAA Capstone office, requesting careful consideration of each question, assuring the participants of the confidentiality of their responses, and answering

questions about the questionnaire. In most cases the pilot then completed the survey form in front of the interviewer. In some cases however, the pilot took the form and returned it, completed, later.

The interviews also included a request for additional comments of a general nature concerning aviation safety in the Y-K Delta and the Capstone program. Discussing their opinions and attitudes helped increase rapport between the interviewer and individual respondents, enhancing the data collection for this baseline survey and also building the bridge required for follow-on interviews later in the Capstone project.

8.3. Results

Survey Universe

Our survey universe consisted of all the pilots who worked for companies that have aircraft equipped with Capstone avionics. We attempted to contact as many pilots as possible employed by companies participating in Capstone. Dr. Daniels was able to complete 47 interviews with pilots from 13 of the 19 participating operators, and one operator who is not yet participating. Table 8-1 shows the distribution of interviews across companies.

Table 8-1. Pilot Baseline Interviews by Company

Company	Number of Baseline Interviews
Arctic Circle Air	4
Arctic Transportation Services	1
Bellair, Inc	1
Craig Air	1
Cub Drivers	0
Frontier Flying Service	3
G&L Air Service (G. Walters)	0
Grant Aviation	6
Hageland Aviation	8
Larry's Flying Service	0
Kusko Aviation	1
Neitz Aviation Inc	0
Northern Air Cargo	9
Peninsula Air	4
Ptarmigan Air	0
Shade Aviation	0
Tanana Air Service	0
Village Aviation	6
Yukon Helicopters, Inc.	1
Yute Air Service	2

Pilots' experience with Capstone equipment varied. About two out of three pilots interviewed had already received Capstone training, and some of those had extensive experience flying Capstone-equipped aircraft. Others had none. A few of the 16 pilots without Capstone training had also been flying Capstone equipped aircraft. In Table 8-2, "none" means no hours of experience

flying Capstone equipped aircraft, "some" means 1 to 15 hours, and "extensive" means more than 50 hours. No pilots in this group reported between 15 and 50 hours of Capstone experience.

Table 8-2. Capstone Training and Experience

Experience Flying Capstone Equipped Aircraft	Pilot Capstone Trained?			
	Yes	No	No Answer	Total
None	8	10	0	18
Some (1 to 15 hours)	3	2	0	5
Extensive (more than 50 hours)	10	1	0	11
Unknown	8	3	2	13
Total Responses	29	16	2	47

Section A. Pilot Characteristics

All the pilots interviewed were male; they ranged in age from 24 to 60, with a mean age of 41.7 years. All pilots had at least a high school education. More than three out of four of our respondents had at least some college, and about half had associate's or bachelor's degrees. Table 8-3 shows the number of survey respondents with different amounts of total flying time and Yukon-Kuskokwim Delta flying time. Although several pilots had little time in the Yukon-Kuskokwim Delta (from 0 to 50 hours), none had less than 500 hours total flying time. In fact, the least experienced pilot of this group had logged a 850 hours total time.

Table 8-3 Pilot Total Time and Y-K Delta Time

Number of Pilots by Flight Hours		
Number of Flying Hours	Pilots by Total Time	Pilots by Y-K Delta Time
0-500	0	12
501-1,500	6	9
1,500-5,000	15	10
Over 5,000	22	11
Pilots not reporting time	4	5
Total Interviews	47	47
Summary Flight Time Statistics: All Survey Respondents		
	Total Time	Y-K Delta Time
Mean Hours	7,605	3,730
Median Hours	5,700	1,650
Minimum Hours	850	0
Maximum Hours	25,000	23,900

The pilots vary widely in their experience with night flying and instrument flying. As Table 8-4 shows, the means for hours of night or instrument flying are far above the medians, indicating that the distribution is skewed by a few values far above the mean. About 15 percent of respondents reported no experience flying in the Y-K Delta at night; 40 percent had no Y-K Delta instrument time.

Table 8-4 Mean and Median Hours of Night and IFR Experience

	Minimum	Maximum	Mean	Median
Night Flying				
Total Hours	0	8,000	1,106	275
Y-K Delta Hours	0	2,300	406	100
Instrument Flying				
Total Hours	0	13,000	1,077	200
Y-K Delta Hours	0	3,500	364	50

Section B. Employment and Training

Pilots ranged from having just started to 15 years of employment with their current employer. About half had one year or less; almost one in three had less than 6 months (Table 8-5).

Table 8-5. Length of Employment with Current Employer

	Number of Respondents	Percent of Responses
Less than 6 months	12	28%
7 to 12 months	8	19%
1 to 3 years	10	23%
more than 3 years	13	30%
Total responses	43	100%
No Answer	4	
Total Surveys	47	

We asked pilots about training they had received in the 14 months before the interview. This time interval should capture all training they are required to repeat on an annual basis, as well as other training they may have had recently. Pilots reported initial or recurrent training most often; some reported upgrade, requalification, or transition training. Table 8-6 combines all training hours to look at the total ground training and flight training hours reported. Only one pilot reported no training in the last fourteen months. Over half of the pilots that reported their training time reported more than a week (40 hours) of ground training, and more than a full day (8 hours) of flight training.

Table 8-6. Training Hours Reported	
Ground Training Hours	
Amount of Training	# of Pilots
None	1
1 to 20 hours	7
20 to 40 hours	9
40 to 80 hours	18
More than 80 hours	6
No Answer[11]	6
Total	47
Flight Training Hours	
None	2
1 to 8 hours	15
9 to 40 hours	18
More than 40 hours	6
No Answer	6
Total	47

Pilots reported a great variety of training, as indicated in Table 8-7. Nine pilots reported their Capstone training, typically 12 hours of ground training. This Capstone training is technically post-baseline training, but its exclusion wouldn't significantly change Table 8-6.

Table 8-7. Training Received by Type of Training				
	Number of Pilots		Mean Hours reported	
Type of training	Reporting this type of training	Reporting hours	Ground	Flight
Initial	29	25	36	18
Recurrent[12]	20	16	23	6
Upgrade	11	8	17	37.5
Transition	6	4	23	19
Requalification	10	8	18	16
Flight	27	21	17	15
Capstone	9	8	11	1
Check ride, Initial	7	7	18	5
Flight Safety	2	1	a	a
GPS	2	2	4	0.5
Hazmat	2	2	8	0
Instruction	2	2	11	12
Specific aircraft	4	4	7.5	3
Part 121 training	1	1	n/a	n/a

[11] One pilot did not answer any of the training questions; five pilots told us that they had received training, but did not report the hours of training received.

[12] In question B2b "recurrent" was misprinted "recruitment." However, B2a was "initial" training, and several pilots either corrected B2b to "recurrent" or specified "recurrent" in question B3a, "Other training." Therefore, we believe most pilots understood what was intended. This error has been corrected for future surveys.

Only one pilot reported never using GPS equipment, and one more reported that he did not know how to use it. Most respondents (40 out of 47) have used GPS "extensively." About half taught themselves to use the GPS equipment; the other half had some formal training as well.

One in four respondents could not estimate how much training he would need to use Capstone effectively (this question had by far the most "don't know" responses). Of those who felt they could estimate the training needed, the most frequent answer for ground, simulator and flight training was "1 to 5 hours."

Section C. Opinions About Safety and Capstone

In this section, we asked a variety of questions about pilots' safety concerns, potential benefits and problems they saw for the Capstone equipment, and their attitudes about the equipment itself.

We asked first about general safety concerns in the Yukon Kuskokwim Delta. We provided a list of 16 possible safety problems, and asked pilots to rate each on a 5 point scale from "Not a Concern" (1) to "A Major Concern" (5). Figure 8-1 summarizes the results of these questions. Respondents expressed the most concern about pilots inexperienced in Alaska conditions and about congestion at airports. Forty percent of our respondents felt that pilots inexperienced in Alaska conditions are a major safety concern; all but one pilot found inexperience at least a minor concern. Congestion around airports was only slightly less worrisome; 30 percent found it a major concern, and 45 of 47 respondents thought it was at least a minor concern, or more serious (that is, choosing "3," "4," or "5").

Surprisingly, pressure from companies, other pilots, and passengers to fly appeared to be one of the least worrisome problems to this group of pilots. This would seem to challenge the widely held belief that pressure to fly in marginal conditions is a major source of safety problems, and we will need to investigate this further. It is notable that the older the pilot, the less concern he indicated about pressure.

Figure 8-1. Question C1. What are your safety concerns regarding commercial flying in the Y-K Delta?

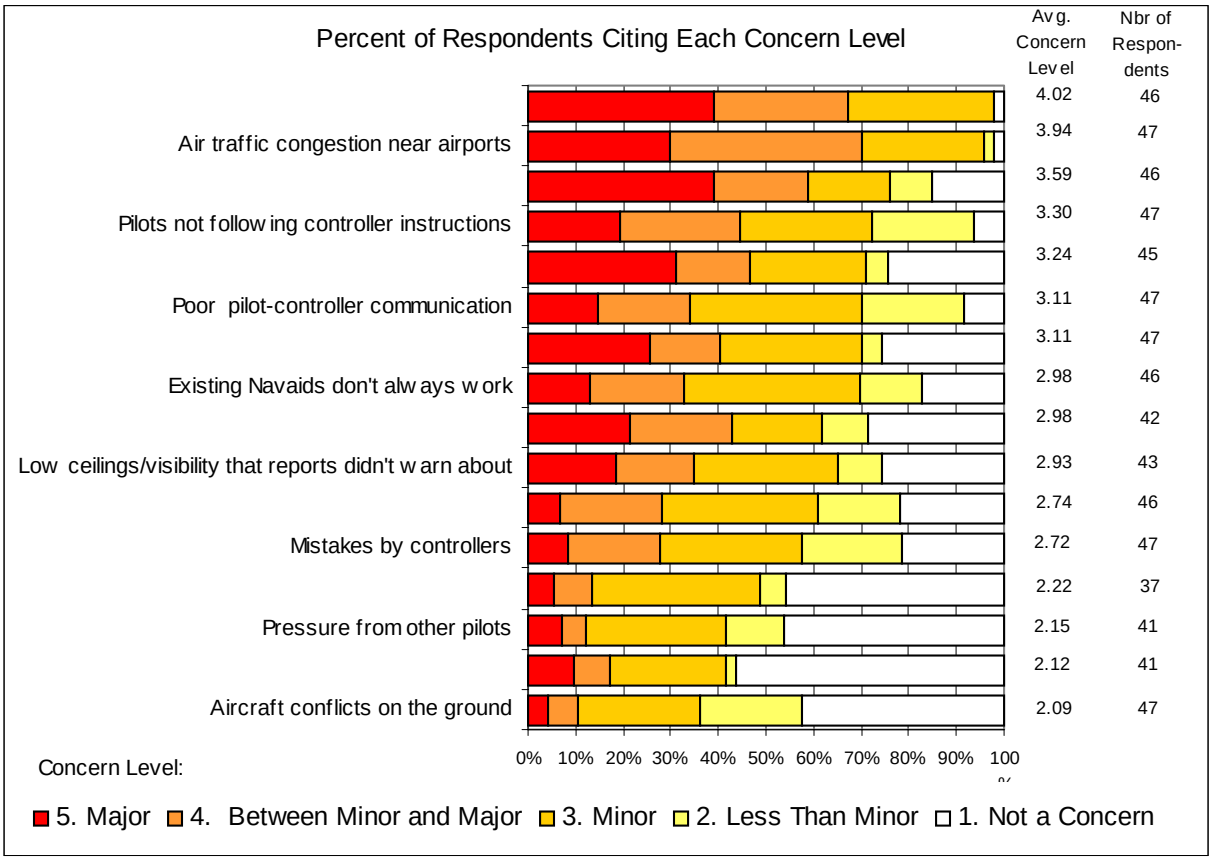


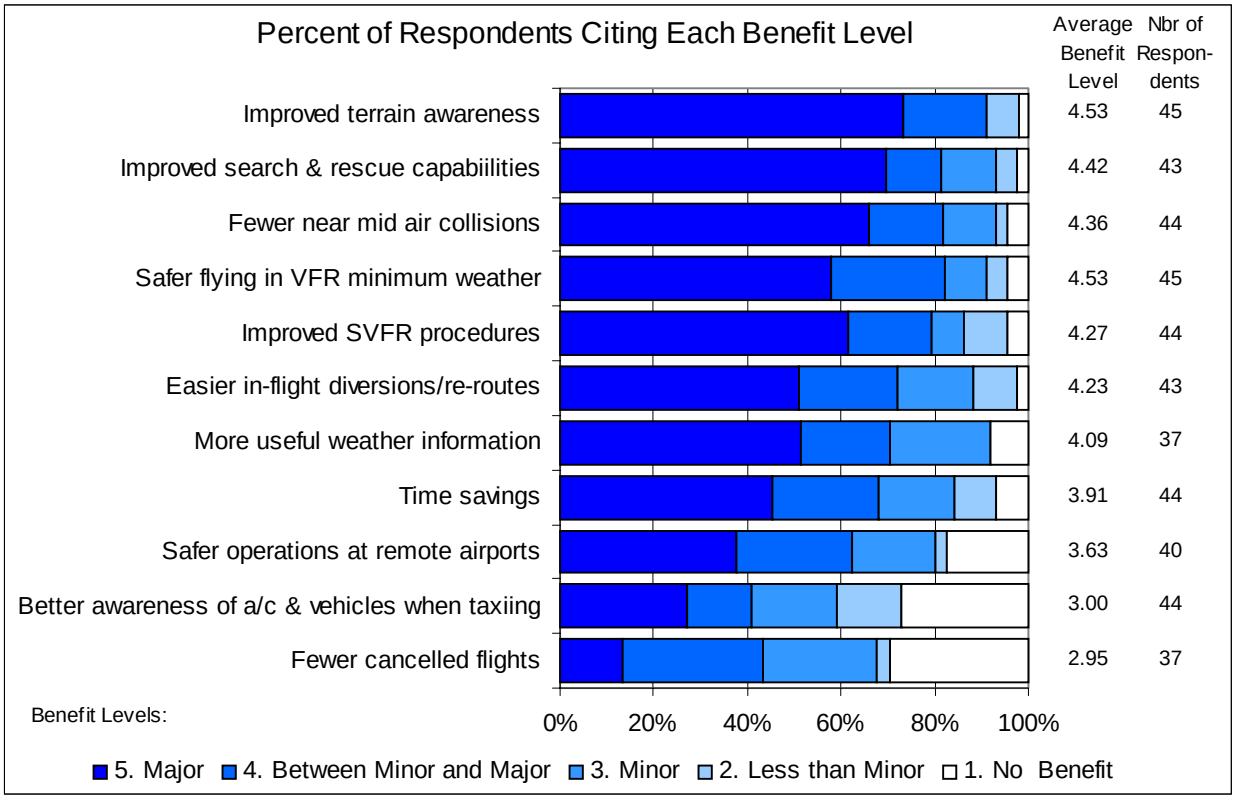
Table 8-8. Pilots' Opinions about Other Potential Y-K Delta Flight Safety Problems (1=Not a concern, 3=Minor Concern, 5=Major Concern)		
Potential Safety Problem	Number of Pilots Responding	Average of Answers
Inadequate weather information[13]	24	4.1
Aircraft flying IMC into airports without clearance	1	5.0
Pilots not in communication/radio	1	5.0
VFR Traffic in marginal weather	1	5.0
Controllers talk too fast	1	3.0

The next set of questions asked about potential benefits the Capstone equipment might provide for flying in the Bethel area (Figure 8-2). Pilots were generally positive about the potential benefits listed: the mode answer for all the benefits except "fewer cancelled flights" was 5, "A Major Benefit." In general, pilot's perceptions of Capstone's potential benefits were not affected by whether or not they had actually flown with the equipment. The one exception was that pilots who

[13] The high number of pilots citing inadequate weather information reflects the fact that some (but not all) pilots were asked about this factor. The other factors in Table 8-8 were concerns raised by the pilots, not specifically asked about by the interviewer. However, the high level of concern (4's and 5's) that pilots who were asked assigned to this problem shows that it is a major concern for many pilots.

had used the Capstone equipment rated the potential time savings as a greater benefit than those who had not. Only one pilot cited a benefit we had not listed, "improved terrain awareness at night," which he thought would be a major benefit of the program.

Figure 8-2. Question C2. What benefits do you expect from the Capstone program in the Bethel area?



Next, we asked pilots about potential problems with using the Capstone equipment (Figure 8-3 and Table 8-9). Their responses and open-ended comments (included later in this section) reflected concern that pilots might put too much effort into and reliance on using the equipment rather than flying the airplane. As with benefits, the pilot responses were similar regardless of whether or not they had experience flying with the equipment. Responses were also unrelated to total time or Y-K Delta time. However, pilots who flew more instrument departures and IMC approaches generally rated all three potential problems as greater concerns than those with less instrument experience. Only a few pilots expressed other concerns.

Figure 8-3. Question C3. What are the potential problems with the Capstone program in the Bethel area?

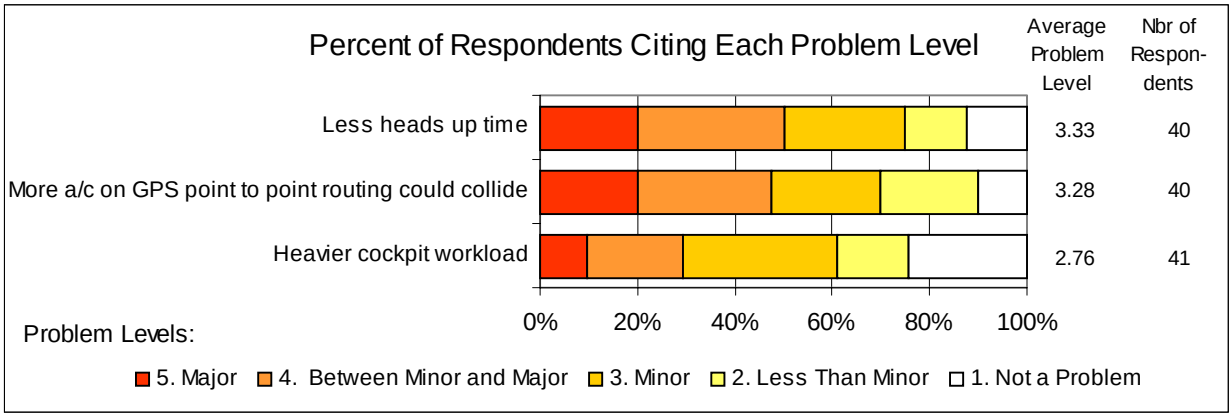


Table 8-9. Pilots' Opinions about Other Potential Capstone Problems
(1=Not a Concern, 3=Minor Concern, 5=Major Concern)

	Number of Respondents	Average Answer
FAA will abuse	2	5.0
Employer will abuse (tattletale)	1	n/a
All a/c not equipped	2	5.0
Reliance will create dangerous situations if Capstone fails in poor weather.	1	n/a

We also asked why pilots might choose not to use Capstone equipment, citing five possible reasons. Pilots were more divided on these questions than on either the benefit or problem questions (Table 8-10). A few pilots added other reasons, primarily concern about possible surveillance for enforcement reasons (Table 8-11).

Table 8-10. Reasons pilots might choose not to use Capstone equipment

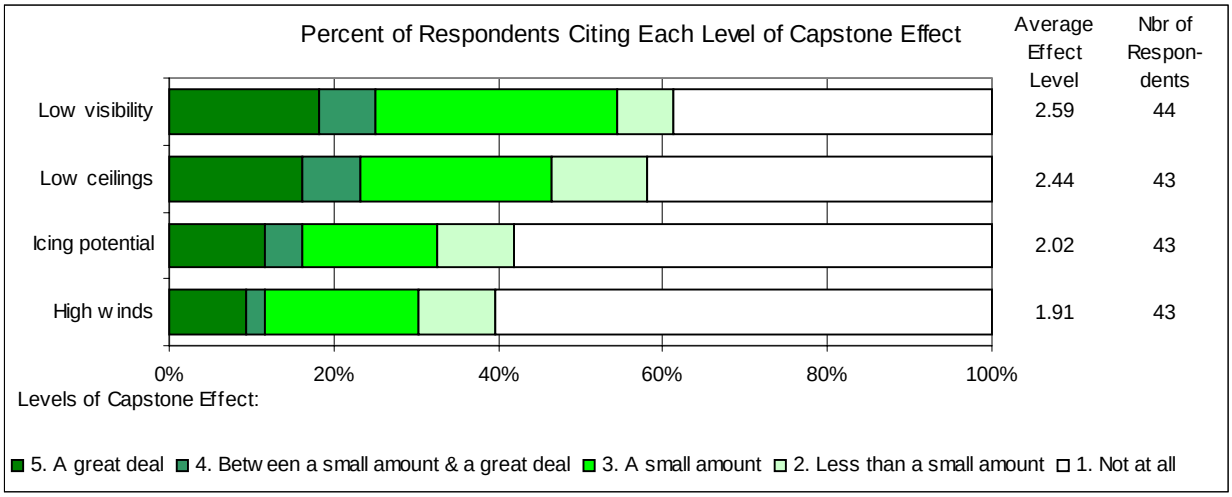
	Yes	No	Don't Know/ No Opinion
C7a. Too distracting	14	20	13
C7b. Too difficult to use	13	21	13
C7c. Don't want company watching aircraft location at all times	18	16	13
C7d. Don't trust equipment to provide reliable information	8	30	9
C7e. Concerned that equipment might break	10	26	11

Table 8-11. Other reasons cited by some pilots for choosing not to use Capstone equipment:

Reason	Number of Pilots Citing Reason
FAA watching	4
Enforcement/prosecution	3
Other watching	2
Excessive time required	1

Most pilots did not expect Capstone equipment to make much difference in their go/no go decisions. More than three out of four indicated "Not at All" up to "A Small Amount" for each of the four conditions listed (Figure 8-4).

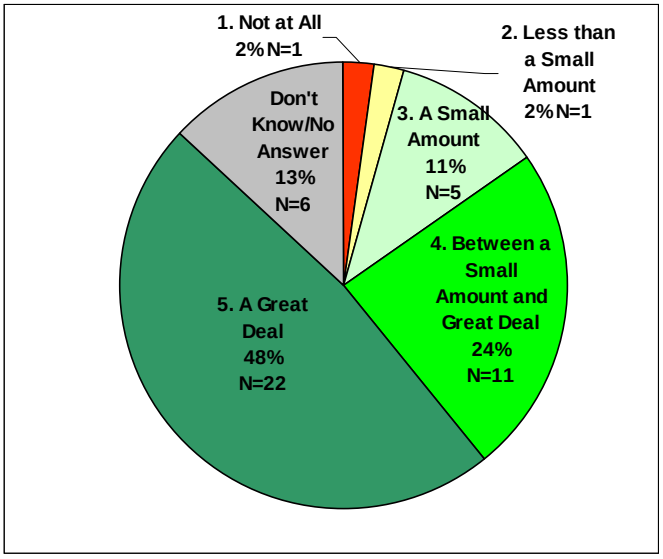
Figure 8-4. Question C6. To what extent do you expect Capstone to affect your go/no go decisions?



Most pilots (70 percent) liked or strongly liked the Capstone equipment, whether or not they had actually used it. Of the pilots who were able to estimate their future Capstone use, all reported that they would use the equipment at least "sometimes." Over 60 percent said that they would "always" use the equipment. One pilot commented that the position of the equipment in his aircraft would make it difficult to use.

We asked pilots if they thought that Capstone equipment could make flying in the Y-K Delta safer; they could answer on a 5-point scale from "Not at All" to "A Great Deal." The most frequent answer–22 of 41 respondents– was "5" (A Great Deal), and 11 more chose "4."

Figure 8-5. Question C8. Do you think the Capstone program will make flying in the Y-K Delta safer?

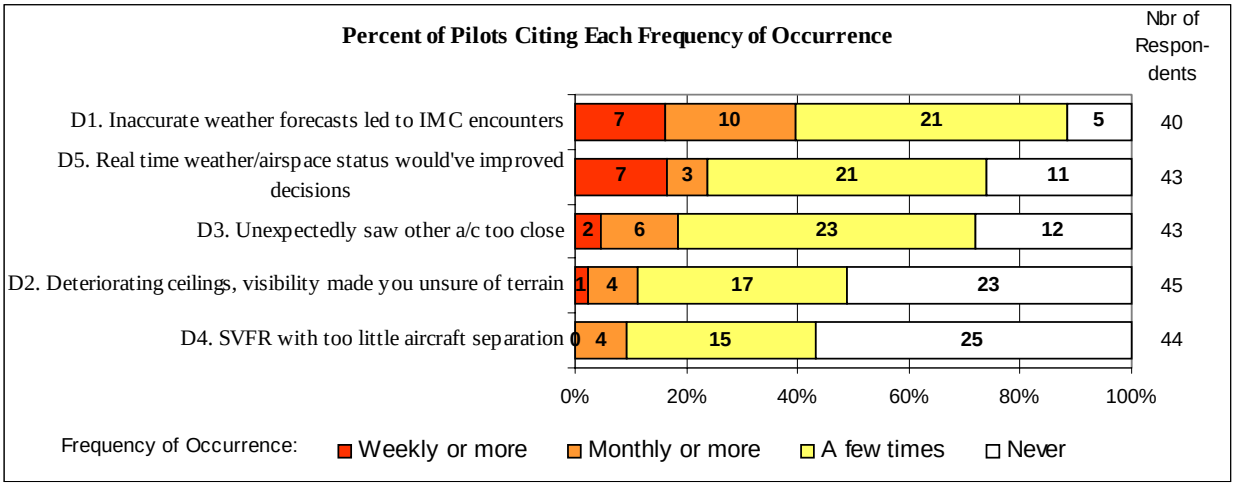


Section D. Pilot Experiences Relevant to Capstone Use

Section D asked pilots about situations they may encounter for which the Capstone team feels the equipment might be helpful. The survey asks how many times in the last year pilots have experienced these situations. Three were related to deteriorating weather and two to aircraft separation. While most pilots reported that they never or only occasionally encountered the situations we asked about, in each case there were some pilots for whom the problem was common– encountered on a monthly or weekly basis.

Figure 8-6 summarizes the answers to those questions. The most frequent problems seem related to inaccurate or old weather information, reflected in the answers to questions D1 and D5. Relatively few of the respondents reported problems with too little aircraft separation when cleared for an SVFR approach.

Figure 8-6. Questions D1 through D5. How Often Do Pilots Have Experiences where Capstone Avionics Might Help?



The responses were not significantly correlated with total flight time, Y-K Delta flight time, instrument time, length of employment, or overall attitude about Capstone's potential contribution to safety (question C8). Pilots encountering these situations were not clustered in a few companies, and they worked for both the small, VFR-only operators and the larger operators that typically fly IFR.

If we believe that accidents occur in proportion to the exposure of pilots to risky situations– such as those we asked about above– then the lack of any significant relationships between the data we collected on the pilots and their frequency of encounters with those risky situations poses several new avenues to explore in our safety study. Pilots with different levels of training and different experiences may interpret phrases such as "unsure of your position" and "a collision hazard" differently, so their self-reports are not an accurate measure of the risks they are exposed to. Or, the safety differences we generally see between the larger and smaller companies, and between less and more experienced pilots, may result not from how often pilots encounter hazardous situations but rather from how they respond to those situations. Finally, it's possible that our initial sample size may have been too small to show relationships that actually do exist, in which case we should be able to document those relationships as the study continues and we interview more pilots.

Pilot Comments

We asked pilots for their comments in several places in the survey: we asked what training they felt would help them to fly safely in Y-K Delta; how Capstone might address their safety

concerns; and what they might want to add about Capstone, aviation safety, or flying in the Y-K Delta. Pilots had the opportunity to respond in writing or verbally. The interviewer recorded any verbal comments in the space provided on the questionnaire, as close to verbatim as possible. All the comments we received are included in Table 8-12. We have grouped responses into those from line pilots and those from pilot-operators, by certificate type of the operator (135 or 121), and by the amount of experience the pilot reported flying with Capstone equipment. Pilots fell into three groups in their Capstone flying experience. The "none" group had not yet flown aircraft with Capstone avionics, the "some" group had flown from 1 to 15 hours, and the "extensive" group had flown over 50 hours with Capstone avionics[14].

Many pilots were impressed with the potential of Capstone avionics to help improve aviation safety. Pilots also liked additional instrument approaches and weather information and wanted continued improvement in those areas. The most frequently expressed concerns were about the necessity for good piloting skills, whether or not aircraft were equipped with Capstone avionics.

As pilots gained experience using Capstone avionics, they expressed a decided preference for Capstone-equipped aircraft, citing the capability of GPS-direct navigation and the value of aircraft proximity information. Pilots were concerned, however, that the collision avoidance benefits of the equipment could not be realized unless all aircraft were Capstone equipped. Others addressed such specific safety factors as the VFR/IFR mix of air traffic, congestion near airports, en-route weather information and pilot training. A few pilots were also concerned about "heads-down" flying and relying too much on the equipment.

Comments by pilots in management positions were far-ranging, dealing with the mix of factors related to aviation safety in the Y-K Delta, including economics, pilot shortages, regulations and pressure, including competition. Some were skeptical about how much of the potential safety benefit of Capstone equipment will be realized unless changes in these other factors are also considered.

Finally, a few respondents also commented about the Capstone equipment per se. These comments overlap the information collected by Leonard Kirk in the Capstone Usability Survey. For additional Capstone usability comments, *see Initial Results, Data Collection Effectiveness, Pilot Comments and Interviewer Notes*, September 2000, by Jeff Holland, Leonard Kirk, and Kevin Williams.

The comments we received in our Pilot Baseline study are reported in Table 8-12, grouped by pilots, pilot-operators, and usability comments. The pilot's experience flying Capstone equipped aircraft is noted, as is whether his company typically operates under FAR part 121 or 135.

[14] As noted earlier in this section, none of the pilots we interviewed had between 15 and 50 hours of flight time with Capstone-equipped aircraft.

Table 8-12. Text of Pilot Comments		
Capstone Exp.	FAR Part	Comment Text
Line Pilot Comments		
Extensive	135	Wonderful piece of equipment-if I could afford it, I would install one in my private aircraft.
Extensive	135	When I started first using the system I tended to spend too much time staring at the monitor and less time out the window. We need a heads-up display of terrain, other aircraft, weather etc.
Extensive	135	My biggest concern about flying in the Y-K Delta is awareness of where I am and low visibility. The second biggest concern is running into other traffic.
Extensive	135	Great advance in safety and navigation; multi-leg courses, rather than D, would enhance safety by reducing mid-air potential; and, easy transition for new pilots in the Y-K Delta.
Extensive	135	The potential for mid-air collisions could be reduced by amending the VFR cruising altitude rule.
Extensive	135	Capstone cannot replace looking outside.
Extensive	135	I think we need to make pilots learn how to read maps. Everyone's goal is to not have accidents; this is only a goal, not a reality. Capstone will help but not stop the problem. More flight training is probably better.
Extensive	135	Consider letting the tower get a unit, to aid in the separation of aircraft.
Extensive	135	More airplanes out here need Capstone. Pilots need some actual time in the air or in the simulator with the Capstone equipment when getting trained in it.
None	135	The knowledge I have acquired from the old timers has given me a way out of dangerous situations during times when the weather changed quickly. There are pilots in Alaska who have been flying their own approaches successfully for decades. Their techniques, knowledge and decision-making processes should be studied for possible incorporation in legal flying procedures in Alaska.
None	135	I believe very strongly that the Capstone program is a great benefit to aviation and will improve safety.
None	135	Most pilots seem to prefer to fly Capstone-equipped aircraft once they become familiar with the system.
None	135	I'm looking primarily for two things from Capstone: 1) Terrain awareness 2) Collision avoidance (from other a/c).
None	135	My major concern is mid-air collision avoidance. The navigation capability of this system is unequaled, however, every operator should have it installed.
None	135	Capstone should also be trained to student pilots so every pilot could be aware of what is available to improve safety in actual flight.
Some	135	I'm very favorably impressed by the improved safety in all areas of flight due to the Capstone program.
Extensive	121	Please add instrument approaches into airports in flat areas, where they will provide lower MDAs (Minimum Descent Altitudes); e.g., Tuntutuliak, Quinhagak, Kongiganak, Kwigillinok, Chefornak, Chevak. We need AWOSs with the IAPs.

Table 8-12. Text of Pilot Comments		
Capstone Exp.	FAR Part	Comment Text
None	121	I can assume that, with further training and exposure to Capstone, I will find it a highly valuable tool. I also assume that Capstone will enhance safety and greatly improve operations in the Y-K Delta. But, I am concerned pilots may rely too greatly on the MFD device alone.
None	121	My major concern would be "heads down" flying.
None	121	With GPS (Capstone) so accurate I am concerned about traffic going direct to an airport and opposite direction traffic direct to your departing airport. What about headons?
None	121	Everyone flying in the Y-K Delta should be instrument trained and no more special VFR departures or landings.
None	121	If Capstone does what it is supposed to do, it can help in high traffic areas But I have safety concerns about one controller working multiple frequencies and sectors.
None	121	The potential for mid-airs of part 121 aircraft with part 135 aircraft at remote airports is a concern.
None	121	I would like to see ASOS or AWOS weather reporting to improve.
None	121	This survey is more appropriate to part 135 pilots based in the Delta. It would be more useful to fill this out after extensive use in the a/c.
Pilot-operator comments		
Some	135	Alaska (Y-K Delta) flying, in my opinion, offers many occasions when safety transcends regulations. There are times when being at 300' AGL in good viz is much safer than being @ 500' AGL with no horizon visible. We don't like "Big Brother" monitoring & recording our altitude during these times. That said, I want to stay within regs and on the ground when conditions preclude "legal" VFR, but, pressure from USPO & pax make this difficult.
Some	135	We need weather reports south of Bethel; from Nelson Island all the way up the coast to Goodnews Bay there is no weather observation.
Some	135	(SVFR into BET) Regulations are regulations, but when Bethel goes below 1 mile visibility we can't get in, so everyone goes to Napaskiak (PKA). Now we have 20 planes in ½ mile visibility with no navigation aids, no organized separation of traffic, and the closest emergency response and/or hospital is in Bethel should there be an accident. To kick us out of Bethel, with the tools available there, so we accumulate at another airport doesn't seem safer to me.
Extensive	135	Capstone should not be used as a "Crutch" but as an effective tool in the overall safety of flying. Y-K Delta is tough flying; with weather, and with most pilots with less than 2000 hours total, safety is a big issue, with hazards associated with the Y-K Delta (short, narrow airstrips, icing, wind, clouds, etc.).
Extensive	135	The safety issue of Capstone can best be addressed by requiring IFR a/c operating in the Y-K Delta to be equipped with Capstone equipment and requiring the FAA to use the information provided to separate and, hopefully, speed up IFR traffic, so that VFR traffic is not overly delayed (as by the present slow IFR system). Less time in the air means less chance of a midair or CFIT, etc.
Extensive	135	Capstone will be helpful; Terrain, Traffic, MFD Display; however, it will not replace real-time, heads-up flying, which seems to be the safer of the two for now.

Table 8-12. Text of Pilot Comments		
Capstone Exp.	FAR Part	Comment Text
Extensive	135	The pilot should know where he is all the times, and have the ability to continue safe operation if the Capstone equipment fails.
Extensive	135	Safety for many airplanes operating in the Y-K Delta means avoiding icing as much as it does remaining clear of clouds.
Extensive	121	If Part 135 pilots were trained to 121 standards in specific aircraft simulators (PA-31, C208 etc.), there would be less accidents in Part 135 operations.
Extensive	121	Give us airways, give us AWOS/ASOS @ all airports on the delta, give us an ability to shoot GPS approaches into all our airports in the Y-K Delta legally. Change thinking regarding SVFR procedures in the delta to vary ceiling heights with visibility values (i.e., MET "800 overcast & 20 miles"). The rules should be designed in the best interest of safety, not standardization!
Usability Comments		
None	135	The box and equipment works great. But, as for the displays, the screen is hard to read when temperatures are low and they seem to short out when flying into heavy rain. Also flying in a float plane causes the MFD to turn off in rough water conditions.
None	135	Can satellite WX pictures be relayed to Capstone? A picture showing a two or three hundred mile diameter of various, selected sections might be valuable, if timely.

Appendix A. Accidents and Incidents in the Capstone Area

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA174	0	no	yes	yes	yes

Description: witnesses told a state trooper that the pilot, an assistant guide, departed the lodge in a hurry after receiving a phone call from his wife. These witnesses stated that they b elieved the aircraft to have fuel limited to half the distance to his desired destination, near homer, ak. The nat ional weather service (nws) reported the weather as low ceilings and visibility. The wreckage was located by search aircraft the following morning, approximately 60 miles north of the direct track to the intended destination. The p ilot told a state trooper that his "engine quit on one tank, (and he) switched tanks but it didn't catch." (engine did not restart). The airplane collided with the terrain under pilot controlled flight. An faa inspector found a mixt ure of fuel, water and debris in the fuel strainer and line to the carburetor.

Probable cause: fuel system contamination by water and poor preflight inspe ction and preparation by the pilot in command. The lack of suitable terrain for an emergency float plane landing was a factor in this accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA179	0	no	no	yes	no

Description: pilot made several passes at location for possible landing in remote area. Successive passes to view landing area became lower until below tree top level. Cross wind reporte dly caused aircraft wing to strike trees. Aircraft sustained substantial damage when it collided with terrain.

Probable cause: the pilot's low pass between trees in crosswind conditions and inflight decision to conduct low altitude flight at a location that was too restricted for safe operation. Factors relating to the accident were: cross wind conditions and obstacles (trees).

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93FA045	1	no	yes	yes	no

Description: the pilot-in-command received a weather briefing which indic ated that rainey pass was closed due to ifr conditions. The pilot-in-command departed the rohn airstrip and flew int o a box canyon 3.5 miles west of the pass. The airplane impacted the terrain while in a climbing turn. Weather cond it ions at the time were overcast skies with snow showers.

Probable cause: the pilot-in-command's attempt to fly vfr in imc conditions.factors were the mountainous terrain and whiteout conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93FA060	0	no	no	yes	yes

Description: the pilot reported that while in cruise flight looking at b irds out the left side cockpit window he observed peripherally a "white flash" fill the right side of the forw ard wind screen followed immediately by an audible "thump". The airplane began an uncontrollable descent and yaw to the right. The engine continued to run smoothly. Advancing the engine power controls had no noticeable affect on his ab ility to arrest the descent. The ntsb investigator in charge visited the accident site. No evidence was found of a bird strike. The accident site was surrounded by tall (white) birch trees. The pilot stated that he was not sure what he struck and that it could have been a tree.

Probable cause: the failure of the pilot in command to maintain the proper altitude. The trees were a factor in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93FA152	0	no	no	yes	yes

Description: the on-demand fishing/hunting charter air carrier pilot expe rienced a total loss of power and landed in a small lake. During the ground run following the emergency landing a oil- fed fire destroyed the acft. Investigators found inadequate flight following documentation, and fuel records or maintena nce records for accident acft or operation. Passenger witnesses reported low fuel gauges prior to takeoff. Fuel pu mp examination indicated fuel starvation.

Probable cause: fluid, fuel starvation as a result of the pilot-in-command'simproper in-flight planning/decision. A factor in the accident was the operator's inadequate flight time and fuel upload record keeping.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93FA161	3	no	no	no	yes

Description: while maneuvering at low altitude to observe moose, the airp lane stalled into the ground. The lodge's senior pilot stated that the lodge had no recurrent training program.

Probable cause: the pilot's failure to maintain airspeed resulting in an inadvertent stall. A fact or in the accident was the inadequate recurrent training of the pilot by the operator/management.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA004	0	no	no	no	yes

Description: the cessna 206 carrying a fuel barrel report edly struck a st ump on takeoff from remote river gravel strip, then collided with terrain which damaged the landing gear, fusela ge and horizontal stabilizer. The pilot in command told the investigator that though he walked the runway looking for ha zards, he did not see the hazards in the takeoff area. Information was not available to validate the details of acc ident. The pilot did not return to work. No witnesses to the accident were found.

Probable cause: pilot in command's poor preflight planning. A factor in th e accident was the hazards on or near the gravel bar strip takeoff area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA005	0	no	no	yes	yes

Description: the pilot said he struck the lip of the gravel runway during a visual approach. The left landing wheel and axle broke off and he completed the landing without the left wheel. The runway is gravel built up to 10 to 15 feet above the surrounding tundra.

Probable cause: pilot did not attain proper touchdown point while landing ona raised gravel runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA014	0	no	yes	yes	no

Description: the air taxi pilot lost control of the airplane and crashed during the second aborted vfr approach. While the pilot said vfr conditions existed, her passengers, and witnesses o n the ground said the visibility was less than one mile. The passengers said the airplanes windshield and wings were accumulating ice before and during the approaches. The pilot could see outside only by looking out the side windows . One passenger said that during the second approach, he tapped the pilot on her shoulder and told her that the runwa y was on the right side of the airplane, and pointed to it. He further said that the pilot then did a very steep right turn toward the runway, during which the airplane shuddered violently, stalled and fell to the ground. The pilot said t he engine would only deliver partial power during the second aborted approach. Passengers and persons on the grou nd said the engine sounded like it was developing full power. During post accident disassembly of the engine, no pr oblems were found that were considered causal to a partial power loss.

Probable cause: the pilot failed to maintain air speed and inadvertently sta lled the airplane. Contributing to the accident were the pilots improper in flight planning/decision, her intentionalflight into known adverse weather, and the fog and icing conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA019	0	no	yes	yes	no

Description: while maneuvering in preparation for landing, the pilot enc ountered whiteout snow and fog conditions, and allowed the airplane to descend and strike the snow covered ground. The airplane remained airborne and returned and landed at its point of departure without any additional significant damage .

Probable cause: the pilots vfr flight into imc conditions, and his failure to maintain sufficient altitude while maneuvering. Contributing to the accident were the whiteout snow and fog conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA024	0	no	yes	yes	no

Description: during a long straight in approach the airplane collided wi th the terrain approximately 2 miles short of the runway, during whiteout snow conditions. The pilot said there was n o ground vegetation to give him a depth perception, and that he was maintaining a constant indicated altitude using his altimeter.

Probable cause: the pilots failure to follow vfr procedures. A factor was the whiteout snow condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA037	0	no	no	no	yes

Description: the pilot stated the runway surface felt hard but was cover ed with a wet snow. The passenger stated there was no visible snow on the airplane's surface just prior to takeoff . The pilot began the takeoff run and he stated it felt normal. After the go-no go point he realized that the airpl ane was not acceleratin g normally. He continued the takeoff and could not accelerate or gain altitude and the ai rplane crashed off the end of the runway. The pilot did not look at the engine instruments during the takeoff; howev er, the engine sounded normal. Examination and a subsequent engine run showed normal operation.

Probable cause: that the lift off airspeed was not attained by the pilot in command because of the snow covered runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA040	0	no	yes	yes	no

Description: the visual flight rules (vfr) restricted private pilot stat ed that he departed the airport in instrument meteorological conditions with the intent of maintaining vis ual reference with the ground by relying on prominent ground features. Once aloft, he realized that there were no prominent ground reference features along the shoreline. The pilot stated that he flew into whiteout conditions and b ecame engrossed in trying to find the ground rather than flying the airplane. The pilot further stated that he becam e spatially disoriented while attempting to perform a 180 degree turn maneuver and that the airplane crashed in an inv erted attitude.

Probable cause: the pilot in commands attempt to conduct a visual flight du ring instrument meteorological conditions and his failure to maintain control of the aircraft during the emergency 180degree turn maneuver to reverse direction. Factors in the accident were the snow and whiteout condition and the pilot in commands limited experience in performing 180 turns solely by reference to the plane's basic cockpit instrumentation.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA048	0	no	yes	yes	no

Description: pilot-in-command executed vfr straight in approach following the ndb/dme approach course. Whiteout conditions were encountered over snow covered featureless terrain. Vfr flig ht not recommended by fss. The aircraft flew into sloping terrain approximately 600 feet below, and in the vicinity of , the f inal approach fix. Pilot recalled losing forward visibility and said he was not referencing the approach plat e at the time of the ground collision. The pilot was advised that the awos weather observation for the destinatio n called for ifr conditions wi th vfr not recommended.

Probable cause: pilot-in-command initiated vfr flight into imc conditions. A factor in this accident was the whiteout weather conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA052	0	no	no	no	yes

Description: the pilot reported that the wind was 90 degrees to the runwa y (17-35). She began a takeoff on runway 17 with 3 passengers aboard, using soft field procedures. Runway 17 h ad a positive (upslope) grade of 1% & the first 400 feet of the runway were not available due to slush & puddles. The p ilot said she aborted the takeoff when she became concerned that the airplane was not accelerating properly. Due to poo r braking action on loose gravel, she was unable to stop on the remaining runway. Before stopping, the airplane hit a sn ow berm on the stopway about 10 to 20 feet beyond the departure end & was damaged. The flight information supplem ent for alaska cautioned that the kasigluk airport was unattended, that the runway conditions were not monitored, a nd that no airport maintenance was performed during winter months.

Probable cause: the pilot's improper planning/decision and delay in abortingthe takeoff. Factors related to the accident were: loose gravel on the surface of the run way and the snowbank (berm) on the overrun (stopway).

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA059	0	no	no	no	yes

Description: the pilot reported that he was using only the left side of t he gravel runway for takeoff because it "...was in a little better condition" than the right half of the runway which wa s very wet and soft from the melting winter snow. Due to wet spots on the left side, some of the left edge cone marke rs had been moved in toward the center of the runway, making the takeoff area even narrower. During liftoff the ai rplane weathervaned due to a crosswind, and the left horizontal stabilizer & elevator collided with one of the 3- ft high runway edge rubber cone markers. The runway had been reopened 4/27 after having been closed for 10 days beca use of the melting snow.

Probable cause: the pilot's poor judgement in attempting a takeoff from a narrow, wet, soft gravel runway with a crosswind. The runway conditions and the crosswind were factors in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA065	0	no	no	no	yes

Description: the airplane was equipped with a sportsman stol kit. The p ilot was making an approach to an unimproved airstrip using an airspeed of 45 knots indicated. He stated the winds were light and variable to 5 knots and during the low passes he noticed only light "bumps." while on short final and just p rior to touchdown, the airplane began to sink and he applied some power but not full throttle. The airplane stru ck the ground about 50 feet short of the airstrip in rough terrain and sheared the nose gear off and nosed over.

Probable cause: the pilot in command's inadequate compensation for the wind conditions and allowing the airspeed to go below stalling speed in the landing configuration.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA072	0	no	no	no	yes

Description: the pilot stated that the airplane began veering off to the left gradually after the nosewheel touched down on the runway. Right rudder was applied, but the airplane continued to veer to the left. Full right brake was applied, but it did not correct the situation. The airplane skidded off the runway and nosed up. Examination of the airplane did not reveal any mechanical malfunction of the brake system or the nose wheel steering or centering mechanism.

Probable cause: the pilot's failure to maintain control of the airplane during landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA073	0	no	no	no	yes

Description: the pilot in command had been performing touch and go landi ngs and this was his final landing. The airplane began to drift to the west side of the runway and upon touchdown the main landing wheel caught on the edge of the runway and the airplane ground looped striking the right wing on the ground .

Probable cause: the pilot in command's failure to maintain proper runway al ignment.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA078	0	no	no	yes	no

Description: the pilot reported that while attempting to land on a relat ively flat unobstructed area near igiugig, alaska, the nose wheel sank into the soft sand resulting in substantial damag e to the right wing.

Probable cause: the pilot in command selected unsuitable terrain for landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA098	0	no	no	no	yes

Description: after landing the pilot applied brake pressure and the right brake went "soft." he was unable to stop the airplane before running off the left side of the runway. Examination of the airplane showed that the right brake piston and "o" ring had popped out of the caliper.

Probable cause: the partial failure of the airplane's braking system.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA099	0	no	no	yes	yes

Description: the pilot landed on a gravel strip. He expected the ground to be firm. The nose sank into the soft sand and the airplane nosed down and then dragged its wing.

Probable cause: the unsuitable terrain selected by the pilot-in-command. Factor was soft terrain condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA109	0	no	no	no	yes

Description: during the step taxi the flight encountered rough water and the airplane nosed over.

Probable cause: the pilot in command's improper taxi speed. A factor in theaccident was the rough water.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA111	0	no	no	yes	yes

Description: the pilot landed on a gravel bar to await better weather. The gravel bar was 375 feet long. The plane normally required a takeoff distance of 400 feet. The pilot believed that the takeoff could be made based upon the 5 to 10 mile per hour headwind, having no passengers, and 3/4ths fuel. At the end of the gravel bar the plane's indicated airspeed was about 40 miles per hour. Normal liftoff airspeed was ap proximately 50 miles per hour. The plane rose several feet then settled into the river and flipped over.

Probable cause: the pilot in command's attempt to takeoff with insufficient airspeed. A factor in the accident was the pilot in command's selection of unsuitable terrain on which to land and takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA126	0	no	no	no	yes

Description: just as the airplane lifted off the beach its left wing hit a stationary pickup truck. The pilot then landed the airplane back on the beach. The pilot said she saw the truck before starting the engine in preparation for takeoff, then didn't see it again until just before the collision. Be cause of the high tide the pilot was in a hurry, and the takeoff space was limited. According to the 3 passengers, th e airplane was "dodging" the incoming water during the takeoff run. The pilot said she normally sat on a cushion to give her better forward visibility, but was not using a cushion at the time of the accident because a new seat had b een installed.

Probable cause: the pilot-in-command's failure to see and avoid the truck.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA132	0	no	no	no	yes

Description: just as the airplane was about to touch down a caribo u appea red on the runway, immediately in front of the airplane. The pilot ballooned the airplane over the caribou then touch ed down on the runway. He then lost directional control and ground looped the airplane, causing the left wing and tail t o hit the ground. The pilot had aborted his first approach because of a caribou on the runway.

Probable cause: the pilot's failure to maintain directional control of the airplane. A factor was the animal on the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA135	0	no	no	yes	yes

Description: the pilot-in-command landed on the beach and during the roll out the main wheels sank into the soft sand and the airplane nosed over.

Probable cause: the pilot-in-command's selection o f unsuitable terrain for landing. A factor was the soft terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA158	0	no	yes	yes	yes

Description: after making a low pass over a mountainous work site the he licopter start ed a right turn. The pilot said he soon realized that the helicopter would not be able to out climb the steep terrain, so he started a turn back to the left. Then the right skid hit the mountainside, causing the skid a nd the right half of the crosstubes to be torn from the airframe. Some additional damage was also sustained by the f uselage.

The helicopter returned to its nearby base camp and landed on a makeshift support structure. The pilot said he might have encountered a downdraft. The pilot and four passengers said the winds were gusty at the time of the accident.

Probable cause: the pilot's improper in-flight planning/decision, and his delay in taking remedial action. Factors were the mountainous terrain and gusty winds.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93LA181	0	no	no	yes	yes

Description: the pilot said the engine quit due to fuel exhaustion about one mile short of his destination, where he was planning to refuel. The off-airport forced landing resulted in the airplane nosing over. The pilot said he thought he had enough fuel to reach his destination.

Probable cause: total loss of engine power due to fuel exhaustion and the pilot's improper fuel consumption calculations. Factor was the unsuitable terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94FA080	3	no	no	no	yes

Description: according to a witness, the airplane was heavily loaded with passengers & baggage. The pilot elected to take off east on a 1920' soft wet runway with a 2-degree upslope, which ended at a steep drop-off. About 20 miles east at dillingham, the 1147 adt wind was from 060 degrees at 5 knots. The witness said that the wind was from the east with gusts to 20 knots & that the airplane accelerated slowly during the take off roll. Tire marks (matching the airplane) showed that it lifted off 261' before the end of the runway. After lift-off, the airplane settled in a descending left turn & crashed. No preimpact mechanical failure was evident. The airplane's weight & balance was estimated to be 4011 pounds with a center-of-gravity (cg) of 97.8 inches. Its maximum certificated gross weight was 3600 pounds with a cg range of 90 to 95 inches.

Probable cause: the pilot's inadequate preflight planning and preparation, and his failure to ensure that the airplane was within its gross weight and center-of-gravity limits, which resulted in an inability to obtain sufficient airspeed for sustained flight and a resultant stall/mush. A factor related to the accident was: the soft/wet/uphill runway condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA006	0	no	yes	yes	no

Description: the pilot-in-command stated that he was landing on a ridge line when a gust of wind slammed the airplane onto the landing area. There are no weather reporting facilities in the area. The pilot indicated the wind was from the east at 10 to 15 knots.

Probable cause: the pilot-in-command's failure to compensate for the wind conditions. The gusty wind was a factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA010	0	no	no	no	yes

Description: the pilot-in-command elected to land on an old oil company airstrip that had been plowed. The airstrip was 10,000 feet long and 200 feet wide. He decided to use only the southeastern 2000 feet. He made 6 overflights of the airstrip and did not see any berms on the southeast end of the airstrip. Upon touchdown the airplane's landing gear struck a berm and the airplane nosed over.

Probable cause: the pilot-in-command's selection of unsuitable terrain and the berm on the airstrip.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA016	0	no	yes	no	yes

Description: the pilot reported that while performing a takeoff from runway 16 with an easterly wind at 25 knots gusting to 35 knots, the airplane suddenly veered about 45 degrees to the left. The plane did not respond to corrective inputs and the right wing struck the runway.

Probable cause: the failure of the pilot-in-command to adequately compensatefor the gusty cross wind condition. A factor in the accident was the wind gust.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA021	0	no	no	no	yes

Description: the pilot reported that while performing a 20 degree left banking turn from base leg to the final approach heading with full flaps the stall warning horn came on. While in the turn, the pilot recalled observing an indicated airspeed of between 50 and 55 knots and the

plane's altitude was from 50 to 100 feet above the ground. The pilot said that he applied full power and maintained a nose down attitude in an attempt to regain airspeed. The airplane collided with the snow covered tundra approximately 300 feet short of the runway.

Probable cause: the pilot-in-command's failure to maintain proper approach airspeed.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA022	0	no	no	no	yes

Description: the pilot-in-command reported that during the takeoff roll, the airplane's left main landing gear wheel collided with a snow berm, which resulted in the loss of directional control. The airplane then exited the runway and went onto tundra.

Probable cause: failure of the pilot to maintain proper alignment during the takeoff roll. Factors related to the accident were: darkness and the snow berm along the edge of the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA031	0	no	yes	yes	no

Description: the pilot of a scheduled part 135 commuter flight was attempting to land at a fog shrouded airport on a 2500 x 25 ft runway. When the pilot visually acquired the runway, it was 100 feet to his left. The pilot inadvertently stalled the airplane while attempting to align the plane with the runway.

Probable cause: the pilot-in-command's failure to maintain the proper airspeed which resulted in an inadvertent stall and his failure to initiate a go-around when the runway environment was not clearly defined. A factor in the accident was the fog.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA034	0	no	yes	no	yes

Description: the pilot landed on runway 30 with wind from 320 at 25 to 28 knots. After the cargo was unloaded the pilot taxied for takeoff. While taxiing on runway 22, as the airplane taxied beyond the cover of several buildings, it began to slide sideways to the left. The pilot added power in an attempt to control the airplane but it continued to slide and then flipped over.

Probable cause: the pilot's failure to maintain control of the airplane. Factors in the accident were the strong crosswinds and the icy/snow covered taxi surface.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA066	0	no	no	yes	yes

Description: the pilot stated that he just finished "dragging" a sand bar on which he planned to land. After making his pass he started to pull up and make a turn. He stated, during the maneuver he stalled the airplane. The airplane's altitude during the maneuver was 45 feet above ground level.

Probable cause: the pilot's failure to maintain airspeed above the stall speed during maneuvering flight.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA068	0	no	no	no	yes

Description: according to the pilot's attorney, after landing the right main wheel began to "drag", and the airplane veered to the right. The pilot was not able to control the turn and the airplane ground looped. Examination of the airplane showed that the right axle had fractured and was bent upward. Subsequent visual examination of the axle showed no fatigue striations visible on the fracture surfaces. The fracture surface exhibited characteristics of overload failure.

Probable cause: the pilot's failure to maintain directional control during landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA072	0	no	no	yes	yes

Description: the terrain sloped up to the runway threshold at an angle of 7 to 8 degrees. It was the same colored gravel as the runway. The threshold was marked with an orange cone on eac h side of the runway at the crest of the slope and runway threshold. The pilot landed short of the threshold, on the slope, and bent the main gear rearward.

Probable cause: the pilot's failure to attain a proper touchdown point. Factor was the inadequate runway marking.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA081	0	no	no	yes	yes

Description: the pilot and passenger needed to make a "pit stop" and land ed near a dead walrus. Since it was late the pilot decided to return to an earlier camp to retrieve their gear. He was alone in the airplane during the takeoff. He stated that he started the airplane's takeoff roll on the hard tundra an d transitioned to the beach sand. When the airplane's landing gear rolled onto the beach sand the airplane nosed o ver.

Probable cause: the pilot's selection of unsuitable terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA099	0	no	no	no	yes

Description: the pilot, conducting fish guiding operations under 14 cfr p art 91, attempted to takeoff across the short part of the lake into an 8 knot headwind. The airplane became airborne but settled back onto the water beyond the point of no return. The floats struck the shoreline and they separated from the airplane. The airplane nosed over onto the bank.

Probable cause: the pilot's failure to use the available longer portion of the lake for the takeoff run.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA102	0	no	yes	no	yes

Description: the pilot stated that he misjudged the strength of the tailw ind and landed the airplane halfway down the 1800 foot wet sand/gravel strip. He considered but cancelled out a go -aro und because he believed that he was committed to landing the plane.

Probable cause: the pilot misjudged the strength of the tailwind and did notperform a go-around in a timely fashion so as to avoid landing the airplane halfway down the strip. Factors in theaccident were the wet landing strip and the tailwind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA112	0	no	no	yes	no

Description: the pilot and a passenger were completing a personal cross-c ountry flight for the purpose of hunting and the pilot planned a landing in a remote area of tundra in an airplane equipped with large tundra tires. The pilot estimated the landing area to be about 600 feet long. The pilot landed in about the middle of the area; however, then decided to perform a go-around. The pilot added full power; however, th e left wing and left landing gear struck about a 20 foot high tree. After impact, the pilot landed and discovered tha t the in tended landing area was 400 feet long.

Probable cause: the pilot's inadequate in -flight planning and failure to attain a touchdown point in the landing area. An obstacle (tree) in the landing area was a factor in the accident.

Report Numbe r	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94LA116	0	no	no	yes	yes

Description: the pilot landed the airplane on a gravel bar. During the l anding roll he was applying brake pressure. The wheels hit a soft spot in the gravel and the airplane nosed over.

Probable cause: the pilot's selecting a gravel bar for a normal landing. A factor was the soft spot in the gravel bar.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA002	0	no	no	no	yes

Description: the flight was departing an airstrip that was in poor condit ion. The pilot stated the left main gear "slipped" into a depression in the runway's surface during the takeoff roll. The airplane continued to slip off the runway until the left wheel struck the willows growing on the runway's edge. The pilot stated it was too late to abort the takeoff and the airplane overran the end of the runway.

Probable cause: the pilot's failure to maintain proper runway alignment during the takeoff roll. A factor associated with the accident was the rough/uneven condition of the runway's surface.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA010	0	no	yes	no	yes

Description: the pilot was landing in a crosswind at the conclusion of an on-demand charter flight with 2 passengers. The airport traffic control tower was reporting a 20 degree crosswind an d the runway was covered with ice and snow. During the landing flare, the pilot noted that the aircraft was driftin g off of the approach course. The airplane bounced and then settled onto the runway and ran off the edge of the run way near the end. The horizontal stabilizer was damaged when it struck a snow berm. The pilot reported that the brak ing action was poor to nil and at touchdown, the crosswi nd was about 40 degrees at 25 knots.

Probable cause: the pilot's inadequate compensation for crosswind conditions. A crosswind and icy runway conditions were factors in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA013	0	no	yes	no	yes

Description: the pilot was landing a wheel equipped airplane at a remote airport as part of a scheduled charter flight with two passengers. The pilot had landed at the airport earlier in the day and was aware that the runway surface was covered with snow and ice. When the airplane touched down, the airp lane weathervaned to the left into an 18 knot crosswind. The pilot's input of rudder and nose wheel steering had no e ffect. The airplane slid off the departure end of the r unway and down an embankment into a snow bank.

Probable cause: the pilot's inadequate compensation for crosswind. Crosswind conditions and an icy runway surface were factors in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA017	0	no	yes	yes	yes

Description: the pilot was departing a remote airport as a continuing por tion of an on-demand charter flight with two passengers. The 1,717 feet long runway was covered with 4 to 5 inches of snow and the perimeter o f the runway had snow banks along the edges and ends. The pilot began the takeoff roll and li fted off about halfway down the runway. Flat lighting conditions made it difficult to distinguish the runway bound aries from the surrounding terrain. The airp lane settled to the runway near the departure end and struck a 2 foot hig h snow berm at the end of the runway. The airplane then descended toward lower terrain off the departure end of the runway and collided with several trees. A post crash fire consum ed the airplane.

Probable cause: the pilot's inadequate preflight planning for the departure.a snow covered runway, flat lighting conditions, and a snowbank were factors in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA020	0	no	yes	yes	no

Description: the air taxi pilot reported he departed st. Mary's airport w ith one passenger aboard. He said he was flying about 600' agl along the south bank of the yukon river, when opposite d irection traffic reported inbound to st. Mary's, also flying along the south bank. The pilot said he elected to tr ansition to the north bank to avoid traffic, but soon encountered deteriorating weather conditions. He said forwar d visibility rapidly diminished, and he entered whiteo ut conditions. While trying to keep visual contact with the sho reline and trees, he said he inadvertently allowed the airplane to descend until it struck snow covered terrain.

Probable cause: the pilot's decision to continue visual flight into instrument meteorological conditions. Factors associated with the accident are the pilot's failure to maintain adequate altitude/clearance from terrain, and the whiteout weather conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA024	0	no	yes	no	yes

Description: the pilot was taxiing his high-wing, wheel equipped airplane for takeoff in a northbound direction. A crosswind of about 25 knots was blowing from the east. During the taxi, the nose wheel hit a small snow bank and the airplane nosed down slightly. The wind then picked up the aft end of the a irplane and pushed it onto its nose. The airplane was pushed across the ramp and into a snowmobile packing crate.

Probable cause: the pilot's inadequate compensation for a crosswind condition. A crosswind was a factor in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA025	0	no	yes	no	yes

Description: the pilot was landing at a remote airport as the positioning portion of an on-demand air charter flight. The pilot made a radio call to the area faa flight service station to check if a local notice to airman (notam) had been issued for the airport and learned that none were on file. The air port is unattended and the runway condition is not monitored; however, the runway condition is maintained by lo cal contract maintenance personnel who can issue a local notam if the runway is not usable. The pilot performed a sh ort field landing and upon touchdown, found the runway covered by ice. Braking action was nil and to avoid running off the end of the runway, the pilot maneuvered the airplane onto the ramp area at the right side of the runway. The left main landing gear and nose wheel dug into soft snow and the left wing struck the ground.

Probable cause: a failure of the pilot to maintain directional control of the airplane. Icy runway conditions and a lack of a local notam to report the runway condition by local maintenance personnel were factors in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA028	0	no	no	no	yes

Description: the pilot fueled the airplane from plastic fuel containers a nd then did not drain the fuel sumps. The airplane had a supplemental type certificate for the use of auto fuel and w as using auto fuel. During the flight the pilot noticed that the left fuel gauge was "running low" while the right f uel gauge was showing full even though the fuel selector was in the both position. He slipped the airplane trying to make the fuel move to the left tank. The engine stopped producing power while he was in a slip. He was unable to re start the engine prior to landing in deep snow on the bonsilla river.

Probable cause: the pilot's failure to follow the procedure in the pilot's operating handbook concerning the uneven distribution of fuel, and starvation of the fuel intake line by unporting.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA029	0	no	no	no	yes

Description: the pilot stated t he runway was covered with 2 inches of sno w and he elected to perform a short field takeoff.he said he applied back pressure on the yoke at 70 mph and the airpl ane lifted off at 80 mph. The airplane settled back to the runway, lifted off again and flew beyond the departure end o f the runway. The pilot said the airplane would not climb or accelerate, and he was concerned about colliding with tre es beyond the end of the runway. He said as the airplane descended, he applied full flaps to cushion the impact. The airplane landed in the runway overrun and nosed over. The pilot wrote in his statement to the ntsb that he felt the ac cident was precipitated by a partial loss of engine power. A postaccident engine run disclosed a partial loss of engine power and an erratic firing spark plug.

Probable cause: the partial loss of engine power due to an erratic spark plug.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA031	0	no	yes	no	yes

Description: the pilot was landing on an ice covered gravel runway as a c ontinuation of his business flight to remote villages. During the landing roll, the airplane began to drift to the left, toward a 4 foot snow bank. The pilot over-corrected and the airplane slid to the right and struck a 2 foot tall snow bank along the right edge of the runway. The airplane became stuck and the pilot dug the airplane out. An inspect ion at that time did not reveal any obvious damage. Two months later, the pilot noticed damage that was evident to t he left wing and firewall and reported the accident.

Probable cause: a failure of the pilot to maintain directional control of the airplane during the landing roll. A factor in the accident was an icy runway surface.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA036	0	no	yes	yes	no

Description: after receiving a special vfr (svfr) clearance, the pilot de parted the airport with a passenger on a scheduled commuter flight to a remote airport. About 14 miles north of the air port, at 1,000 feet mean sea level (msl), the pilot encountered whiteout conditions and reversed course, descend ing to about 500 feet msl. The pilot requested a svfr arrival back to the departure airport and began maneuvering to intercept the inbound course. While in instrument meteorological conditions, the airplane descended and collid ed with flat, snow covered terrain about 5 mile north of the airport. The pilot was unable to distinguish any terrai n features until impact with the ground.

Probable cause: the pilot's continued vfr flight into imc conditions and a failure to maintain altitude. A factor in the accident was "whiteout" weather conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA040	0	no	no	no	yes

Description: the pilot, the sole occupant, was completing a cargo flight to a remote airstrip. The wind conditions varied from almost calm to gusts of about 25 knots. During the landing flare, the airplane suddenly dropped to the runway, landing on the main landing gear and tail. The pilot, who holds a m echanic certificate, inspected the airplane and noted that the tail skid was bent upward. After inspection, the pilot decided to depart for the company base. An inspection revealed that the tail was bent upward with wrinkling of the upper empennage surface, just aft of the cabin.

Probable cause: the pilot's misjudgment of the landing flare and failure to maintain adequate airspeed to avoid stalling the airplane.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA045	0	no	yes	no	yes

Description: the student pilot reported he was landing his tail wheel air plane to the northeast with a prevailing 30-35 knot easterly crosswind. He said that during the landing roll, th e wind lifted the right wing, which caused the left wing to contact the ground. He said he was unable to maintain direct ional control, and the airplane subsequently nosed over. The student pilot reported he had two passengers aboard, and had accrued an estimated 4,500 hours of total flight experience.

Probable cause: the student pilot's inadequate compensation for the wind conditions. A factor in the accident is a crosswind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA050	0	no	no	no	yes

Description: the pilot was dispatched to a remote gravel airstrip at toks ook to pick up an undetermined number of passengers. Upon arrival the pilot loaded the airplane with 5 passengers. He elected to take off to the north to avoid a reported soft spot at the south end of the runway. The 1,800-ft runway slo pes uphill to the north with a gradient of approx 2%. During the takeoff roll, the airplane encountered a soft spo t and decelerated. The pilot continued the takeoff, and the airplane's right main tire struck a snow berm shortly after passing over the end of the runway. The right main tire and gear strut separated from the landing gear. The flight conti nued to dillingham and a gear up landing was made. The pilot had estimated the airplane's takeoff weight at 6,200 p ounds. An faa inspector reviewed the flight's weight and balance data and computed its weight at 6,576 pounds. At thi s weight, the airplane's flight manual indicates that the airplane requires 2,200 ft for takeoff from a level, h ard su rfaced runway, and 2,100 ft when loaded to 6,200 pounds. The flight manual has no provisions for determining addition al runway needed for takeoff from a soft, uphill runway.

Probable cause: the pilot's inadequate preflight planning and preparation. Factors associated with the accident are: the dispatcher's decision to dispatch a multi-engined airplane to a short, soft airstrip, and inadequate company management oversight/surveillance.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA058	0	no	no	yes	yes

Description: the commercial pilot departed on an air taxi cargo flight to a remote destination. About 20 minutes after takeoff, the engine suddenly quit, and the pilot performed an emergency l anding on rough terrain in a stream bed. After recovery of the airplane 5 months later, an examination of the engine re vealed that the #2 main bearing had failed and the crankshaft had fractured through the crank cheek between the #2 rod and #2 main bearing journals. The #2 main bearing was severely fragmented and deformed, and the number 2 main bearing saddle was severely deformed. A metallurgical examination of the crankshaft indicated that it had failed f rom fatigue. The examination also disclosed that the crankshaft conformed to the manufacturer's material specific ations for hardness and nitriding. Records showed the engine had been rebuilt by the manufacturer on 7/23/92 and i nstalled in the airplane on 9/3/92. After being rebuilt, it had accumulated 1154 hours of flight time. At 1004 hours, th e oil pump had been serviced due to low oil pressure. During a 100 hour inspection at 1140 hours, metal was found in the oil filter and the #4 cylinder was changed.

Probable cause: a failure of the #2 main engine bearing and subsequent fatigue failure of the engine crankshaft. A factor relating to the accident was: the lack of suitable terrain for an emergency landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA060	0	no	no	no	yes

Description: the pilot stated his approach and landing speed was too fast and the airplane bounced upon touchdown. When it touched down a second time the left main gear struck a small pile of sand and sticks. To regain directional control the pilot added full power. He stated he had insufficient room in whi ch to stop the airplane so he attempted to accelerate and climb out. The airplane's main gear struck some brush locat ed 75 feet past the departure end of the landing/takeoff area. The airplane nosed over into the mulchatna river.

Probable cause: the pilot's failure to attain the proper approach and landing speed, not maintaining directional control, and his inadequate remedial action(s). A factor in the accident was the loose objects in the landing area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA071	0	no	no	yes	yes

Description: the pilot reported the amphibian airplane's left engine lost power while in cruise flight due to "fuel exhaustion". He said he turned the fuel crossfeed on, but failed to shut the fuel selector for the left engine off, which subsequently caused the right engine to quit. He was able to restore powe r to the right engine, but was too low to regain sufficient altitude to avoid landing hard on a small lake.

Probable cause: the pilot's failure to refuel the airplane, and his improperremedial action(s) which lead to fuel starvation.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA077	0	no	no	no	yes

Description: the runway surface had been graded, and soft graded material had been pushed into a small depression adjacent to the runway. The airplane was taxiing back to the ramp, when the nose wheel rolled into the depression and the nose gear collapsed. The soft area/depression had been previously mark ed with yellow cones. The cones had been removed while the runway was being graded and had not been replaced. No notams had been issued. The alaska supplement stated that the runway was soft and runway conditions were not monitored.

Probable cause: the airport maintenance personnel's inadequate maintenance of the runway by not replacing the yellow cones that marked the soft area. The soft area on the runway was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA080	0	no	no	no	yes

Description: the pilot reported he was attempting to takeoff with his flo at equipped airplane from a slough. He said he did not use the full length of the area available for takeoff. Also, he said that upon reaching the end of the slough, the airplane's altitude was insufficient to clear the trees whic h lined the bank. The airplane collided with the trees and sustained substantial damage.

Probable cause: the pilot's failure to abort the takeoff in a timely manner.a factor relating to the accident was: the pilot's failure to use all of the available area (waterway) for the takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA084	0	no	no	yes	yes

Description: the pilot was making an approach to a 3800 foot long gravel airstrip which had a 60 foot hill at the approach end. The airplane's tail struck the ground during landing. According to information from the operator, the airplane's sink rate was not sufficiently arrested by the flight crew before touc hdown, and the tail skid struck the ground during the landing flare.

Probable cause: failure of the pilot-in-command to assure the airplane was adequately flared for landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA097	0	no	no	yes	yes

Description: the pilot reported he landed on a remote beach site. After l anding, he noticed the beach was soft, and he elected to taxi to higher and firmer ground. During taxi, the left main landing gear struck a rock and separated from the airplane.

Probable cause: the pilot's selection of unsuitable terrain for taxi.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA098	0	no	no	yes	yes

Description: the pilot reported he was landing at an off-airport site adj acent to a creek. He said the airplane went off the right side of the landing site and entered rough terrain. The tail wheel assembly separated from the airframe, and the empennage was damaged.

Probable cause: the p ilot's failure to maintain directional control, during an off-airport landing on rough/uneven terrain, which resulted in an inadvertent ground swerve. The terrain condition was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA100	0	no	no	yes	no

Description: the pilot reported that during an approach to land, the floa tplane encountered a microburst (downdraft) and made a hard landing on the water. She elected to abort the landing. She stated that during the ensuing takeoff run, while still on the water, the wind forced the floatplane to the left toward the shoreline, despite her attempts to correct back to the right. Subsequently, the aircraft contacted rocks near the s horeline and nosed over.

Probable cause: failure of the pilot to adequately compensate for wind conditions, which resulted in a failure to maintain directional control. The downdraft and crosswind were related factors.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA105	0	no	no	no	yes

Description: the airplane had neither flown nor received an annual inspec tion in about 3 years. The pilot was performing a high speed taxi, attempting to warm the engine. He stated he had insufficient room in which to stop and elected to fly the airplane around the traffic pattern. The airplane's engine b egan to lose power, so the pilot landed on the tundra, and the airplane nosed over. The airplane was fueled with marine /automotive fuel.

Probable cause: the loss of engine power for an undetermined reason.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA108	0	no	no	yes	yes

Description: the pilot was taking off from a lake. The normal takeoff pro cedure was to align the airplane with an island in the middle of the mouth of the kulik river. The pilot aligned th e airplane with a protrusion of land on the shoreline left of the mouth of the river. He thought the protrusion was the island. When he realized that it was the shoreline, he attempted a right step turn and tried to lift the left float out of the water. The airplane became airborne, but it struck some trees. The pilot stated the airplane was too clo se to shore to abort the takeoff.

Probable cause: the pilot's failure to properly align his takeoff path.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA110	0	no	yes	no	yes

Description: the certificated commercial pilot, who was owner of a fishin g lodge, was landing a float equipped airplane on a remote lake to check on the status of his clients. During the landi ng approach, the airplane encountered a gust of wind and collided with trees adjacent to the lake. The airplane recei ved damage to the wings and floats. After a field repair to the float assembly, the airplane was flown to anchorage for a permanent repair.

Probable cause: the pilot's inadequate compensation for the wind conditions during the landing approach, and his failure to maintain altitude/clearance from trees. A factor relating to the accident was: the gusty wind condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA123	0	no	no	yes	yes

Description: the certificated private pilot and three passengers landed a t a remote area to fish. The pilot had landed at the accident site on previous occasions. The landing area was so ft and muddy with high grass. A light rain was falling in the area. The pilot indicated that during the takeoff roll f or the return flight, the airplane accelerated to 60 mph, but liftoff was impeded by high grass. The pilot aborted the takeoff, and the airplane traveled beyond the takeoff area. The nose gear then failed, and the airplane nosed over .

Probable cause: the pilot's selection of unsuitable terrain, and his delay in aborting the takeoff. The soft terrain and high grass were related factors.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA132	0	no	no	yes	yes

Description: the pilot was performing a glassy water landing maneuver on a lake. The airplane flew past the pilot's intended point of landing, and he aborted the landing by rapidly applying p ower. The pilot stated the engine coughed and then "came to life" but the airplane would not outclimb rising terrain in the direction of its flight path.

Probable cause: the pilot's abrupt (improper) use of the throttle.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA136	0	no	no	yes	yes

Description: the pilot stated he decided to land on taylor mountain, and the landing was harder than normal. He did not think, however, that the landing was hard enough to collapse the la nding gear. The failed landing gear strut tube was visually examined, and the fracture surface showed no striation marks . The inside of the tube showed no pitting and no large rust spots. The tube walls were uniformly thick around the t ube near the fracture surface.

Probable cause: the pilot's misjudged landing flare, which resulted in a hard landing and overload failure of the main landing gear.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA138	0	no	yes	no	yes

Description: the pilot reported that during an approach to runway 30, he intentionally tried to land off-center to avoid a soft area; however, the airplane drifted "unknowingly" to the lef t. Just prior to touchdown, the airplane encountered a gust or "eddy" and rolled left. The left wing dragged in tall gra ss on a sandy bank beside the runway. The airplane then touched down and veered off the runway. The nose gear collap sed and damaged the firewall. The pilot stated that the wind was blowing from the west at 17 knots with gusts to 21 knots.

Probable cause: the pilot's inadequate compensation for wind conditions and failure to maintain proper alignment with the intended point of landing. A factor relating to the accident was: theunfavorable wind condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA154	0	no	yes	no	yes

Description: the pilot and a passenger were landing at a remote hunting lodge. The pilot landed to the west with a 7 knot crosswind from the south. During the landing roll, the airplane ground looped to the left and veered off the left side of the airstrip, across a berm. The right main landing gear collapsed, and the right wing contacted the ground. The right gear strut failed during the landing. The pilot was concerned that the gear strut may have failed due to internal corrosion; however, an inspection did not reveal any evidence of corrosion.

Probable cause: the pilot's adequate compensate for wind conditions and failure to maintain directional control of the airplane. The crosswind was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA156	0	no	no	no	yes

Description: the pilot and three passengers were departing from the mouth of a river in a float equipped airplane, to return the passengers to a fishing lodge. During the takeoff, the airplane became airborne, but struck the edge of a 7 foot high river bank. The airplane slid over the bank and down toward an ocean beach, then nosed over. It received damage to the floats, wings, fuselage, and vertical stabilizer.

Probable cause: the pilot's inadequate preflight planning/preparation to assure the airplane would maintain adequate altitude/clearance from the river bank during takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA161	0	no	no	yes	yes

Description: the certificated commercial pilot and 2 passengers, who were hunting clients, departed a remote 650 foot long gravel area. The pilot began his takeoff roll in a southeast direction into a 10 knot wind. He indicated that the airplane became momentarily airborne in ground effect. At the end of the takeoff area, the ground sloped downhill, and the airplane began to descend. The pilot also indicated that the wind decreased to zero during the takeoff. The aircraft collided with trees beyond the takeoff area and then nosed over.

Probable cause: the pilot's selection of unsuitable terrain for takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA171	0	no	no	no	yes

Description: the pilot reported he was landing on a 6,000 foot long gravel runway. He said he did not see a soft, gravel berm on the runway prior to landing. The accident airplane's main landing gear encountered the gravel berm, and the left main wheel separated from the landing gear at the axle. The airplane subsequently nosed down.

Probable cause: the pilot's selection of an unsuitable portion of the 6,000 foot long gravel runway for landing. A factor associated with the accident was: the soft gravel berm on the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA172	0	no	yes	yes	no

Description: the pilot was attempting to takeoff from a remote lake towards rising terrain. He had made an earlier flight in the same direction with winds estimated at 7 to 10 knots. The initial flight was made without incident. The pilot said that soon after takeoff on the accident flight, he suddenly encountered winds estimated at 40 knots. Also, he said that an associated downdraft would not allow the airplane to climb away from the rising terrain, and that he elected to land in the tundra instead of continuing into higher terrain.

Probable cause: the pilot's inadequate weather evaluation. Factors associated with the accident were: the box canyon, rising terrain, wind gusts, and downdrafts.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA175	0	no	no	no	yes

Description: the pilot/hunting guide reported he was landing his tailwheel converted cessna 150 airplane at a remote, off-airport site to pick up a hunting party and their game. He said that during the landing roll, he lost control of the airplane, and it subsequently nosed over.

Probable cause: the pilot's failure to maintain control of the airplane, while landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96FA081	1	no	no	no	yes

Description: the pilot had departed to pick up a company worker about 35 miles south of the departure point on a remote island. The wreckage was located the following day, partially submerged and floating in a small lake. The helicopter received damage consistent with a significant vertical descent onto t he lake. The rotor system was undamaged. The wreckage examination revealed particulate contamination in the fuel s ystem. The helicopter was routinely fueled from barrels and hand pumped through a water/separator type filter. Exam ination of the water separator revealed water and sediment in the filter bowl. A sample of fuel from the fuel barrel c ontained particulate contamination. Following the accident, the engine was removed and placed in a test stand where it was started. The engine produced full power until the left magneto failed internally due to corrosion from wat er immersion.

Probable cause: a loss of engine power due to fuel contamination found in the fuel supply and helicopter fuel system. Factors in the accident were the pilot's inadequate filtration (servicing of the helicopter) of the fuel supply, and the pilot's inadequate performance of emergency procedures.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96FA102	4	no	no	no	yes

Description: the cargo flight was en route, when a fire erupted in or nea r the #3 engine. During subsequent emergency procedures, the flight crew pulled the fire handle first. Later, they fe athered the #3 engine. The fire did not extinguish. During an attempt to land at a rural, intermediate airstrip, while the airplane was in the traffic pattern, witnesses saw fire coming from the area of the #3 engine. They stated the right wing buckled upward, and the airplane crash ed. Examination of the wreckage revealed a failure of the master rod in the front bank of cylinders of the #3 engine. Metallurgical tests revealed a crack in the top of the master rod head, wh ich had resulted from corrosion pits. The side of the master rod head was measured and found to be out of round. T he master rod shank also fractured due to fatigue. The operator's training procedures and the douglas aircraft emer gency checklist procedures, required that the engine's propeller be feathered first, and then the fire extinguishin g system to be activated. According to information derived from the airplane's cockpit voice recorder, the flight crew reversed that order. The effectiveness of the fire suppression system is diminished if the propeller is not f ea thered first.

Probable cause: fatigue failure of the master connecting rod, which originated from corrosion pitting, subsequently compromised the engine crankcase, and resulted in a fire; and failure of theflight crew to follow emergency procedures by pulling the fire handle before feathering the propeller, which diminished the effectiveness of the fire suppression system.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96FA109	2	no	yes	yes	no

Description: the first pilot, a non-instrument rated private pilot, depar ted on a cross-country flight to a remote area in a float equipped airplane. He was accompanied by a commercial/instr ument rated pilot/passenger. The flight was reported overdue and was located 3 days later by search personnel. T he airplane collided with mountainous terrain at an elevation of 2,200 feet along the intended flight path to th e destination. The accident site was located in an area of hills that had a maximum elevation of 2,452 feet and surroun ded by low, flat terrain. About 37 miles east at iliamna, ak, the 1514 special weather observation was in part: 2,400 feet broken, 4,000 feet overcast, visibility 4 miles in light rain and mist, temperature 55 deg, dew point 52 degree s, wind from 100 deg at 13 knots.

Probable cause: vfr flight by the pilot into instrument meteorological conditions (imc), and failure of the pilot to maintain sufficient altitude and/or clearance from mountainous terrain. Factors relating to the accident were: the adverse weather condition (low ceiling and rain) and terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA005	0	no	no	yes	yes

Description: the certificated private pilot was flying in support of chec king his trap lines and was in cruise flight about 800 feet above the ground. The engine suddenly quit, and the pilot se lected a gravel bar on a river for an emergency landing area. He overshot the intended landing spot, and the airplan e collided with water. The airplane was recov ered from the river and disassembled for repair by the pilot. He did not r eport finding a cause for the loss of power.

Probable cause: loss of engine power for an undetermined reason. The lack of suitable terrain for a forced landing was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA012	0	no	yes	yes	yes

Description: the certificated commercial pilot and six passengers were de parting a remote airstrip on a scheduled commuter flight. Snow showers were present in the area. The pilot loaded the passengers and waited on the ground for conditions to improve. Prior to departure, the pilot removed snow from th e windshield and the leading edge of the wing. After a ground time of about 40 minutes, the pilot began a takeoff o n a runway that sloped uphill about 2 percent. The airplane did not become airborne until the pilot added full flaps. The airplane lifted off but could not climb out of ground effect. A small hill was ahead of the pilot and she began to retract the flaps. The airplane collided with rising

terrain about 1/4 mile north of the departure end of the runway. A pilot/witness indicated that after the accident, he walked to the accident site and observed snow o n the upper surface of the wings.

Probable cause: the pilot's inadequate planning/decision, improper use of the flaps, and inadequate removal of snow/frost from the wings of the airplane. An upsloping runway and snow conditions were factors in the accident.

Report Numbe r	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA017	0	no	no	yes	yes

Description: during cruise flight, the pilot noted a loss in engine rpm a nd oil pressure at the same time. He performed an emergency landing on a frozen lake. During the landing roll, the right wingtip struck a spruce tree, and the airplane was substantially damaged. During an examination, the accessory section of the engine did not rotate, when the propeller was turned by hand. A teardown of the engine revealed that t he crankshaft was fractured at the number 3 short cheek, between the number 2 rod bearing and the number 2 main beari ng. The engine contained numerous fragments from the number 2 main bearing. The number 2 bearing saddle was severely wor n and deformed. Other bearing saddles exhibited scoring. A metallurgical examination of the crankshaft revealed a fatig ue failure at the aft radius of the number 2 main bearing journal adjacent to heavy rubbing marks from the number 2 ma in bearing.

Probable cause: fatigue failure of the engine crankshaft at the number 2 main bearing journal, where rubbing contact had occurred with the number 2 main bearing. A factor relating to the accident was: the lack of suitable terrain for an emergency landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA019	0	no	yes	no	yes

Description: the operator reported the pilot and a company mechanic were attempting to takeoff from a snow covered runway in gusty crosswind conditions. The pilot applied engine power to begi n the takeoff roll, and the airplane weathervaned into the wind. The pilot reduced power, and the airplane straightened out, but was blown downwind, off the side of the runway and part way down an embankment.

Probable cause: the pilot's inadequate compensation for the gusty crosswind conditions. Factors associated with the accident are the snow covered runway, and gusty crosswinds.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA033	0	no	no	yes	yes

Description: the p ilot was carrying dog food supplies in support of the i ditarod race. He flew to the checkpoint and was unable to find the landing area normally used due to a fresh snowfall. He elected to land on a ice covered slough. There was no snow on the slough. The pilot stated he bounced hard becaus e there was no snow to cushion the touchdown. During the landing roll, the pilot could not stop the airplane on the i ce and it slid into the scrub spruce trees at the end of the landing area. The pilot described the braking action as poor to nil.

Probable cause: the pilot's selection of an unsuitable landing area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA053	0	no	no	no	yes

Description: the certificated private pilot departed a remote airstrip. About 1,000 feet above the ground, the engine quit. The pilot performed an emergency landing on soft snow covered te rrain and the airplane nosed over. An engine examination revealed that the alternator drive coupling, consisting of a hub, retainer and bushing, fragmented within the engine. The alternator drive shaft and the oil pump gear were fractu red when fragments of the retainer were enmeshed in the engine accessory gear teeth that drove both accessories. Th e number 6 cylinder connecting rod failed and penetrated the engine case due to a lack of lubrication. The engine, in cluding the alternator, was overhauled 250 hours before the accident. An engine manufacturer's service bulletin recommen ded inspection and replacement of the standard alternator drive coupling every 500 hours. The engine manufacturer offe red a one piece alternator drive coupling in which the retainer, bushing and hub were bonded together as one unit.

Probable cause: disintegration of the alternator drive coupling, jamming of the accessory drive gear, shearing of the oil pump drive, oil starvation, and failure of the number 6 cylinder connecting rod. Non-compliance with a manufacturer's service bulletin and soft snow were factors in the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA062	0	no	no	no	yes

Description: the certificated private pilot was landing on a gravel area of beach next to a river. During the landing roll, the right main wheel assembly broke. The landing gear strut bega n dragging on the ground and the airplane nosed over. Examination of the gear strut revealed that it was broken al ong a horizontal plane, perpendicular to the outside vertical surface of the strut. A fracture had progressed thr ough the upper

mounting bolt holes that attach the axle and brake mounting plate to the strut. The surface of the fractu re exhibited a dark brown/red appearance and ridges or stop marks radiating from the lower inside edge of the aft mounti ng bolt hole. These stop marks were similar in appearance to progressive beach marks, indicative of fatigue. The remai ning fracture surface, at the inboard edge of the strut and between the bolt holes, exhibited a dull gray appearance and a shear lip oriented on about a 45 degree plane from the lower surface. The remaining fracture surface areas on both sides (forward and aft) of the bolt holes were also gray in appearance with small areas of red rust and corrosion.

Probable cause: fatigue failure of the right main landing gear strut.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA063	0	no	no	no	yes

Description: the airplane was equipped with oversized, 29 inch gar aero " tundra" tires. A witness reported that as the airplane was landing on a hard surfaced runway, it swerved slightly, then veered to the right. The airplane's left main landing gear wheel separated, and the left main landing gear subsequently collapsed. The axle's fracture surfaces were consistent with an overload failure. The same pilot and airplane had be en involved in an earlier ground loop/landing incident on a hard surfaced runway, two days before the accident landing.

Probable cause: failure of the pilot to maintain directional control during the landing, which resulted in an inadvertent ground loop/swerve.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA064	0	no	yes	no	yes

Description: the certificated commercial pilot was conducting flight oper ations in support of fish spotting activ ities and was departing a remote beach at gross weight. The pilot reporte d that frost was present on the wings of the airplane and he began a short field takeoff. The airplane lifted off slu ggishly and then began to settle toward the ground that was sloping toward the ocean. At full power, the airplane touch ed down momentarily and then climbed into the air. The airplane skipped off the water about three times and the pil ot aborted the takeoff. The airplane settled into the water and stopped in a nose down attitude.

Probable cause: the pilot's failure to remove frost from the surface of the wings and his delay in aborting the takeoff. Factors in the accident were the presence of frost on the wings and a deteriorated climb performance.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA067	0	no	no	no	yes

Description: after completing a fish spotting flight, the pilot landed th e airplane at the dillingham airport. While taxiing back from landing, the pilot applied the brakes. During the decel eration, a tire rotated on the rim shearing the valve stem. The tire and portions of the rim separated from the landing gear and the airplane's wingtip dragged the ground. The airplane was equipped with 8:50 size tires.

Probable cause: rotation (slippage) of the tire on the rim, and shearing of the valve stem, which allowed the rim to contact the ground and then separate.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA082	0	no	yes	no	yes

Descriptio n: the takeoff was from a 1,600-foot long gravel runway in vari able crosswind conditions. During the takeoff roll, about one-half way down the runway, the pilot noted a 10 knot decr ease in airspeed. He elected to abort the takeoff, but was unable to stop the airplane prior to overrunning the end of the runway. The airplane's nose gear sheared off, and the airplane nosed over.

Probable cause: the pilot's inadequate compensation for the variable crosswind conditions. Factors associated with the accident were the variable crosswinds and the short runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA105	0	no	no	no	yes

Description: the pilot reported that the left, over-sized tundra tire def lated and the left wing subsequently struck the ground while he was taxiing for takeoff at mc grath, alaska. The p ilot was involved in an accident a week earlier with the same airplane when the main landing gear collapsed while lan ding at a rural mining airstrip. At the previous accident site, the pilot made unauthorized repairs to the landing gea r and wing lift struts. He fashioned a main gear leg from iron water pipe, and taped boards to the lift struts. He the n elected to fly the airplane to palmer, alaska, so that additional repairs could be made. He made an interim stop at mc grath for gas, but did not seek repairs from any aviation repair facility prior to his attempted departure. Discussion with tundra tire experts disclosed that proper landing gear geometry is essential for safe operation. If t he landing gear geometry is incorrect, additional side loads will be placed on the tire, which may cause it to rota te on the rim, slicing the valve stem and allowing the tire to deflate.

Probable cause: the improper and unauthorized repair of the main landing gear by the pilot, and the pilot's decision to operate the airplane with known deficiencies.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA115	0	no	no	no	yes

Description: the airplane's nosegear collapsed during a landing roll on a gravel airstrip. Subsequent examination of the nosegear locking mechanism disclosed a failed hydraulic drag strut lo cking actuator.

Probable cause: the collapse of the nosegear precipitated by the failure of the hydraulic nosegear drag strut locking actuator.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA117	0	no	no	no	yes

Description: the pilot reported he was beginning to taxi the airplane fro m the ramp area to the active r unway. While still on the ramp, and partially through a left turn, the airplane's righ t wing struck a cargo handler, breaking one or more of her ribs. The pilot said he was looking to the left during the turn, and did not see the cargo handler until after the impact.

Probable cause: the pilot's inadequate visual lookout.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA119	0	no	yes	no	yes

Description: the pilot said he was attempting to take off from a remote, off-airpo rt landing site in gusty wind conditions. He said a gust of wind "stuffed" the airplane onto to the ground sho rtly after lift-off. He landed hard, and aborted the takeoff. The airplane subsequently ground looped and damaged the right wing and right main landing gear.

Probable cause: the pilot's inadequate weather evaluation, inadequate compensation for the existing wind conditions, and failure to maintain directional control. A factor associated with the accident was the gusty wind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA123	0	no	no	no	yes

Description: the pilot was returning to a gravel beach site with his amph ibious airplane where he had off-loaded passengers and cargo about 1-1/2 hours earlier. He landed on an adjoining l ake, and taxied up the inclined shoreline onto the beach towards where his previous load of passengers had establishe d a camp. While taxiing on the beach, the pilot turned the airplane to the left to complete a 180-degree turn and face the lake he had just landed on. During the turn, the tail of the airplane struck one bystander, and narrowly missed an other. The pilot stated that he saw several people on the beach, but did not see the individual he hit. The air taxi c ompany's operations ma nual states that it is the pilot's responsibility to afford "public protection" while the airp lane is being operated in the vicinity of ground personnel.

Probable cause: the pilot's failure to maintain an adequate visual lookout in order to see and avoid all ground personnel, his failure to follow company procedures and directives regarding publicprotection, and his disregard of the unsafe/hazardous conditions created by ground personnel in the intended area of taxi.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA132	0	no	no	yes	yes

Description: the pilot, holder of a student pilot certificate, and the so le passenger, landed on a section of remote ocean beach. During the landing roll, the nose wheel sank in soft sand. The airplane received damage to the nose gear, propeller, engine firewall, and right wing.

Probable cause: the pilot's selection of unsuitable terrain for landing. Soft terrain was a factor in the accident

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA146	0	no	yes	no	yes

Description: the pilot reported he landed at a remote, unimproved site to go hunting. Once he landed, he realized the wind was stronger than he had anticipated. He believed the airplane w ould be damaged, if he left the cockpit and attempted to park it. He elected to takeoff instead of hunting. The pilot said that soon after liftoff, at an estimated 100 feet above the ground, a strong gust of wind forced the airplane to make an uncommanded turn to the right and downwind. The pilot said that the airplane began to sink rapidly, and that he was unable to avoid a collision with terrain.

Probable cause: the pilot's inadequate weather evaluation and inadequate compensation for wind conditions. The adverse weather condition was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA153	0	no	no	no	yes

Description: the certificated private pilot was taxiing from landing in a tail-wheel equipped airplane. The landing area was a remote sand and gravel bar. While taxiing, the airplane enco untered a soft spot in the sand and nosed over. The airplane received damage to the rudder and the right wing li ft strut.

Probable cause: the pilot's selection of unsuitable terrain for taxiing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA159	0	no	yes	no	yes

Description: the pilot reported he was on final approach to a small, unim proved landing site to drop off a hunting client. He said that while on short final approach a strong downdraft caused the airplane to slam to the ground causing extensive damage to the airplane. The pilot said the winds were appro ximately 18 knots with higher gusts. He reported that the airplane's glidepath was slightly low, and that the downdraf t was caused by turbulence associated with the local terrain and wind gusts.

Probable cause: the pilot's improper glide path on final approach, and his inadequate compensation for the gusty wind conditions. Factors associated with the accident are the gusty winds anda downdraft.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96LA164	0	no	yes	no	yes

Description: the pilot stated that he landed the airplane on the lake to pick up two hunters. While they were loading the airplane, a snow shower moved in and the visibility degraded from 3 miles to less than 1/4 mile. After approximately 5 minutes, the snow shower stopped and visibility improved to 5 miles. He elected to takeoff. He brushed his hand on the tail surface of the airplane and noted that the snow bru shed off easily. He did not brush any more snow off the airplane. The pilot stated that when he started the engine he looked out at the tail and saw that the snow had blown off the tail. He assumed that it would blow off the rest of the airplane during the takeoff run. The airplane lifted off the surface of the lake and would not climb above 5 fee t of altitude. The pilot aborted the takeoff and had insufficient room to stop the airplane. The airplane collid ed with the shoreline.

Probable cause: the pilot's failure to remove all snow and ice from the airplane prior to takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96ta163	0	no	yes	no	yes

Description: the pilot and three passengers were departing a remote lake in a float equipped airplane. The pilot positioned the hydraulic actuated flaps to 20 degrees. After takeoff, about 150 ft above the water, the pilot positioned the flap lever to the "up" position in preparation of pumping the fla ps up, but said he did not move the pump handle. Turbulence was present during the takeoff, and during a left turn, the pilot encountered a severe gust at the time he positioned the flap lever. The airplane stalled in a left turn that ste epened to almost a 90 degree bank. The airplane descended and the left wing contacted the surface of the lake. The lef t wing was torn off the fuselage, and the floats were crushed upward. Both flaps are activated by a common torque tube connected to a double-acting flap actuating cylinder. At the accident scene, the right

wing flap and right aileron were observed to be extended to an intermediate position. The weather conditions included 20 kts of wind, turbulence, and rain. The pilot expressed a concern that the flaps may have retracted without being pumped to the up position. An e xamination of the flap system and the ratchet valve assembly was conducted after the airplane was recovered and the wings were removed. Leakage of hydraulic fluid and air was observed through the ratchet valve. Additional testing o f the ratchet valve at an overhaul facility did not reveal any leakage.

Probable cause: failure of the pilot to maintain sufficient airspeed during the initial climb after takeoff, which resulted in an inadvertent stall and collision with the terrain (water). Turbulence was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97FA008	1	no	no	no	yes

Description: the pilot was departing on a cargo flight. Just after takeof f, a company dispatcher attempted to contact the pilot by radio. The pilot replied, "stand by." no further communicat ion was received from the pilot. The airplane was observed by atc personnel in a left turn back toward the airport at a n estimated altitude of 200 feet above the ground. The angle of bank during the turn increased, and the nose of the airplane suddenly dropped toward the ground. The airplane struck the ground in a nose and left wing low attitude about 1 mile west of the airport. The terrain around the airport was relatively flat, snow covered tundra. The airplane was d estroyed. A postaccident examination of the engine did not reveal any mechanical malfunction. Power signatures in the e ngine indicated it was developing power. A postaccident examination of the propeller assembly revealed one of three composite blades had rotated in its blade clamp 17/32 inch; however, the propeller manufacturer indicated blade contact with the ground would try to drive the propeller from a high blade angle toward a low blade angle. Movement toward a low blade angle would compress the propeller feathering springs, while movement toward a high blade angle would resu lt in a hydraulic lock condition as oil in the system is compressed. The propeller manufacturer indicated they had no reports of composite blade slippage in the blade clamps.

Probable cause: failure of the pilot to maintain control of the airplane, while maneuvering to reverse direction after takeoff, after encountering an undetermined anomaly. The undetermined anomaly was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97FA009	2	no	no	no	yes

Description: the air taxi charter flight departed bethel for the purpose of conducting a moose count survey between russian mission, alaska, and marshall, alaska. The passenger was a wildlife b iologist for the state of alaska. The airplane was scheduled to stop at emmonak for fuel. The airplane never ar rived. It was located where it had crashed near the yukon river in a steep, nose down attitude, with the nose buried i n the ground. The only trees damaged were those directly adjacent to the airplane, depicting a steep, near vertical, crash path profile. The terrain was flat and tree covered, and there were numerous areas on the ground indicating moose had bedded down. Examination of the airplane disclosed the tachometer on the airplane operated 1.6 hours since the airp lane's departure from bethel. No evidence of any preimpact mechanical anomalies were discovered with the engine, airfra me, or flight controls.

Probable cause: failure of the pilot to maintain adequate airspeed, while maneuvering at low altitude, which resulted in an inadvertent stall and collision with the terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97FA024	1	no	yes	yes	no

Description: the cfr part 135 cargo flight (flt) departed at night on an ifr flt with a load of mining equipment. Route of flt was over remote/mountainous terrain. About 2 hrs after takeoff, while cruising at 12,000' msl, the right engine (#2 eng) & propeller began to overspeed. The captain (capt) feathered t he #2 eng & declared an emergency. He began to divert to an alternate destination, about 120 miles away in an area of lo wer terrain, but the aircraft (acft) would not maintain altitude (single eng service ceiling, as loaded, was about 8 ,700'). The capt increased power to the #1 eng, but it began to produce banging & coughing noises. The capt elect ed to perform an emergency landing at a nearby, remote, military airfield (a/f). The a/f was located in mountainous terrain & had a one-way, daylight only approach. The capt lowered the gear & flaps, & began a visual approach while at tempting to keep the runway end identifier lights (reil) in view. The acft encountered severe turbulence, & the capt app lied full throttle to the #1 eng in an attempt to climb. The reil disappeared from view, & the acft collided with sno w covered terrain about 2 miles west of the a/f. Ground personnel at the a/f reported high winds & blowing snow with limited visibility. Postcrash exam of the #2 eng revealed a loss of the propeller control system hydraulic oil. Flt at 12,000' was conducted without crew oxygen. The crew had exceeded their maximum allowable duty day without adequate c rew rest.

Probable cause: loss of the right engine propeller control oil, which led toan overspeed of the right engine and propeller, and necessitated a shut-down of the right engine; and failure ofthe pilot to maintain adequate altitude/distance from terrain during visual approach for a precautionary landing at an alternate airport. Factors relating to the accident were: fluctuation of the left engine power, premature lowering of the airplane flaps, and an encounter with adverse weather conditions (including high winds, severe turbulence,and white-out conditions) during the approach.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA010	0	no	no	no	yes

Description: the pilot and two passengers were departing on a cross-country on-demand charter flight. The airplane was 120 pounds below maximum gross weight. The pilot departed runway 11, but after lift off, the airplane would not climb. The airplane collided with snow covered tundra terrain about 1/8 mile from the departure end of the runway. The operator indicated the pilot and a mechanic passenger observed the airplane lights flicker on and off, and smelled an odor of overheated electrical wiring. An inspection of the airplane by the faa did not reveal any mechanical malfunction. The wind conditions at the airport, from just before and just after the accident, varied from 300 to 312 degrees at 9 knots.

Probable cause: the pilot's improper planning/decision, and resultant failure to obtain/maintain sufficient airspeed during takeoff. A factor related the accident was: taking off with a tailwind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA012	0	no	yes	no	yes

Description: the pilot stated the right fuel tanks emptied, and he had to shut down the right engine. He elected to make a precautionary landing at nunapitchuk. During the landing, the airplane touched down hard. The airplane was tracking straight during the initial landing roll until the nose wheel touched the ground. The airplane then veered off the right side of the runway. The pilot stated he had a direct 15 knot crosswind from the left.

Probable cause: the pilot's inadequate compensation for the wind conditions and failure to maintain directional control during the landing. Factors associated with the accident were: the lowfuel condition, which led to a single engine landing, and the crosswind condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA019	0	no	no	yes	yes

Description: the pilot and a passenger were landing at night after making a cross-country flight. Visual meteorological conditions prevailed and a vfr flight plan was filed. The pilot reported he was demonstrating a vor approach to the passenger. As the airplane touched down, the pilot noticed that a slight tail wind was present and the runway was slippery. He applied full power and executed a go-around. As the airplane began to climb, the pilot retracted the landing gear and flaps. He also began a slight left turn toward an unlit area of snow covered terrain. The airplane collided with the terrain and a tree, swerving the airplane to the right. The airplane came to rest in the snow with damage to the right wing, engine, propellers, and fuselage.

Probable cause: the pilot's failure to maintain sufficient altitude or clearance from terrain during a go-around. A factor related to the accident was: the dark, night condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA022	0	no	yes	yes	no

Description: the air taxi pilot was flying cargo to a remote village located near the sea. He reported he was following the coastline, with the ocean on his right, and the shore and rising terrain on his left. He indicated that as he approached his destination, the weather conditions began to deteriorate with lowering clouds, drizzle, and fog. He was trying to decide which direction to turn to avoid clouds, when he entered the clouds and struck rising terrain. The pilot was subsequently rescued by local villagers on snow machines.

Probable cause: the pilot's decision to continue vfr flight into instrument meteorological conditions (imc), and his failure to maintain clearance from rising terrain. Factors associated with the accident were: low ceiling, fog, rising terrain, and the pilot's inadequate evaluation of the weather conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA027	0	no	yes	yes	no

Description: the pilot was on a cargo flight and was making an intermedia te stop at a remote airport. Another company airplane landed about 3 minutes before the accident flight. The weath er conditions included flat lighting conditions and overcast skies. Visibility near the runway varied from 1/2 t o 3/4 mile in blowing snow, with a right quartering crosswind of 20 to 30 knots. The pilot indicated the airplan e developed a high sink rate near the approach end of the runway, and he added engine power to stabilize the landing a pproach. The pilot reported that about 150 to 200 yards from the approach end of the runway, he encountering white-o ut conditions. The nose wheel of the airplane struck a snow berm 12 inches wide and 6 inches high, at the edge of the ru nway safety area, about 100 feet short of the runway threshold. Witnesses observed the airplane approaching the r unway at a shallow angle with nearly 200 yards remaining before the beginning of the runway environment. The runway w as marked with illuminated lighting and orange cones.

Probable cause: the pilot's continued vfr flight into instrument meteorological conditions, his misjudgment of distance and altitude during the approach to land, and his failure to attain a proper touchdown point during the landing. A factor relating to the accident was: the flat/white-out lighting condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA030	0	no	yes	no	yes

Description: the pilot and 6 passengers were departing a private airstrip o n a charter flight with a special vfr clearance. The gravel airstrip was 2,400 feet long, was at an elevation of 80 feet mean sea level, and was oriented on a 110/290 degree magnetic heading. The runway was covered by slushy sn ow, about 1-1/2 inches deep. The pilot attempted to depart on runway 11, but aborted the takeoff. He then attempted to depart on runway 29. He indicated that about 1/2 of the way down the runway, the airspeed was about 5 knots below takeof f speed. He elected to continue the takeoff, but the airspeed then dropped, and the airplane departed the end of the runway without ever lifting off. The airplane received damage to the engine, nose gear, and firewall. The pilot rep orted the wind was from the southwest at 15 knots. An official weat her reporting station, 3 miles from the acciden t site, reported the wind was from 160 degrees (true) at 11 knots.

Probable cause: the pilot's selection of unsuitable terrain for departure, and his inadequate evaluation of the wind conditions. Factors associated with the accident were: a snow/slush covered runway, and a quartering tailwind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA034	0	no	no	no	yes

Description: the pilot reported he was attempting to land his wheel equip ped airplane on a remote, frozen lake. He said he slowed the airplane to 2 or 3 miles per hour over the stall speed d uring the final approach. During the landing flare, soon after crossing the edge of the lake, the airplane stalled an d landed hard on the lake, resulting in substantial damage to the airframe.

Probable cause: failure of the pilot to maintain adequate airspeed during the flare, which resulted in a hard landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA042	0	no	no	no	yes

Description: the pilot reported a partial loss of engine power during dep arture from a rural village. He said the airplane was approximately 600 feet agl when he heard a loud "clunk-clunk " and felt an engine vibration. He reduced power, and turned downwind to land on the same runway he had just depar ted. On the turn from base to final, he said the engine continued to lose power, and he was unable to maintain suffi cient altitude to reach the runway. He made a forced landing in deep snow. Postaccident inspection disclosed a f ractured connecting rod bolt. Metallurgical examination at the ntsb laboratory revealed a fatigue failure of the rod bo lt. The engine was rebuilt approximately 1,642 service hours prior to the accident. The engine manufacturer recomm ends an engine overhaul at 2000 hours.

Probable cause: the partial loss of engine power due to a fractured connecting rod bolt, which was precipitated by fatigue. A factor associated with the accident was the snow covered terrain inthe emergency landing site.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA044	0	no	no	yes	yes

Description: the pilot reported that he returned to his departure airport due to deteriorating weather conditions. He departed in daylight conditions, but returned to the unattended field at nightfall. He flew over the runway several times, and attempted to turn on the runway lights by tuning his radio t o the published frequency to activate the lights, and clicking his microphone key several times. The lights did n ot come on, and while in the traffic pattern, the airplane's engine lost all power due to fuel exhaustion. Th e pilot said he was unable to glide to the runway, and landed in a vacant lot, causing substantial damage to the ai rplane. A review of the notices to airmen disclosed that the runway lights had been out of service for the preceding two months.

Probable cause: the pilot's failure to refuel the airplane prior to fuel exhaustion. Factors associated with the accident were the pilot's inadequate preflight preparation and planning by failing to obtain information about the out of service runway lighting, and the rough and uneven terrain at the forced landing site.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA048	0	no	yes	yes	no

Description: the pilot was landing at a remote village site. Reported we ather was approximately 3/8 of a mile at the time of the accident. The pilot estimated the in-flight visibility as 1 .5 miles, and said although much of the runway was shrouded in fog and mist, he could see the approach end of runway 05. While on a base leg to runway 05, he said he was in too close to the runway, and elected to do a tight "s" turn to g ain additional spacing. As he turned to final, he reduced engine power to idle. He subsequently realized he was too l ow and too slow, heard the stall warning horn, and quickly added full power. The airplane rolled to the right, and stru ck the runway with the right wing.

Probable cause: the pilot's decision to continue vfr into imc. Factors associated with the accident are fog/obscuration, and the pilot's failure to initiate a go -around earlier in the approach.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA054	2	no	no	yes	no

Description: the airplane was flying in a remote area. A witness observe d the airplane flying at a very low level near, or possibly below, the tops of a river bank. He said he saw the airplane climb rapidly, slow down, and begin a turn to the left. He lost sight of the airplane, but, within a few seconds, he ard a loud noise and saw smoke in the vicinity where he had last seen the airplane. When he arrived at the accident site , the airplane was on fire. Postaccident inspection of the airplane disclosed no evidence of any preimpact mechanical a nomalies.

Probable cause: the pilot's failure to maintain airspeed which resulted in an inadvertent stall of the airplane. A factor associated with the accident was the pilot's performance of a low altitude flight maneuver.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA055	0	no	no	no	yes

Description: the air taxi pilot/company owner was taking off from his bas e of operations airport in rural alaska with a new hire pilot and four passengers. About one mile from the airport, the pilot and passengers saw and smelled smoke. The pilot immediately returned and landed. At the pilot's request, th e new hire pilot exited the airplane, checked the engine oil dipstick for security, and then reentered the cockpit. The pilot made another takeoff. Shortly after takeoff, smoke began to fill the cockpit, and flame was visible comin g from the engine cowling. An emergency landing was made just off the airport on a small island. The occupants of th e airplane extinguished the fire with water and a small fire extinguisher. Postaccident inspection disclosed a loos e exhaust manifold and fire damage in the vicinity of the exposed exhaust ports. Nuts which affix the exhaust manifold to the engine were found in the bottom of the cowling. The airplane had maintenance performed about one month previousl y which necessitated the removal of the left manifold.

Probable cause: a disconnected exhaust manifold collector, improper maintenance of the airplane by company maintenance personnel, and the pilot's poor judgement in electing to initiate another flight after observing smoke in the cockpit.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA064	0	no	yes	no	yes

Description: the pilot reported he was landing on a remote beach site wit h a prevailing right quartering headwind. During the landing roll, a gust of wind picked the right wing up, and t he left wing and left elevator collided with the beach, causing substantial damage.

Probable cause: the pilot's inadequate compensation for the gusty crosswind conditions. Factors associated with the accident were the wind gusts and crosswind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA067	0	no	yes	no	yes

Description: the pilot was landing a tailwheel/tundra-tire equipped airpl ane on runway 19. During the landing roll, the pilot encountered a crosswind. The airplane began to ground loop t oward the right edge of the runway. The pilot applied left brake pressure, but the airplane continued to the right. The right main gear strut then broke, just above the right wheel axle. The right tire struck the right side of the airp lane, buckling the right side of the fuselage. The wind was reported to be from about 230 degrees at 10 knots.

Probable cause: the pilot's inadequate compensation for wind conditions and failure to maintain directional control of the airplane. A factor relating to the accident was: the crosswind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA073	0	no	no	no	yes

Description: the pilot was departing a beach area in a tailwheel equipped airplane to begin a fish spotting flight. A crosswind of about 15 knots was noted by the pilot from the left side of the airplane. After liftoff, the crosswind caused the airplane to go to the right, and the pilot banked the airpla ne to the left. The left wing struck the ground, and the airplane received damage to the left wing and propeller.

Probable cause: failure of the pilot to properly compensate for crosswind conditions. The crosswind was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA094	0	no	no	no	yes

Description: the pilot reported he was attempting to take off downriver i n his float-equipped airplane. The airplane became airborne, but the pilot said it would not accelerate. He lo oked inside the cockpit at the engine and rpm gauges, and all were normal. When he looked outside, the airspeed had de cayed, and the airplane settled onto the river. The pilot turned the airplane to miss a gravel bar, but struck a tree with the right wing. The airplane turned to the right and collided with the river bank. Postaccident inspection of th e airplane's engine disclosed no evidence of any preimpact mechanical anomaly.

Probable cause: the pilot's selection of an unsuitable area for takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA106	0	no	no	no	yes

Description: the pilot was making a no-wind takeoff downstream from a 4,0 00-foot slow flowing river. The takeoff water run for the conditions was calculated at 1,300 feet. The pilot and pass enger both reported a partial loss of engine rpm just prior to lift-off from the water. According to the pilot, there wa s insufficient stopping distance before reaching a river bank. The pilot rotated the airplane off the water below fly ing speed, cleared the bank, and settled back into the tundra. The pilot stated that a similar loss of engine rpm h ad happened before, but was considered transient.

Probable cause: a partial loss of engine power for an undetermined reason, and the pilot's intentional operation of the airplane with known deficiencies.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA109	0	no	yes	no	yes

Description: the airplane was on short final to land when it encountered heavy rain, which reduced forward visibility. The pilot continued the landing, and during the landing roll, the airp lane drifted right, and the right wing contacted brush and trees. The airplane departed the right side of the 1,700-fo ot-long x 50-foot-wide runway.

Probable cause: the pilots decision to continue the landing into adverse weather conditions and failure to maintain runway alignmet. A factor was the rain shower which resulted in reduced forwardvisibility.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA129	0	no	no	no	yes

Description: operator personnel reported that shortly after takeoff, the engine began to lose power at an altitude of about 600 feet mean sea level, and that emergency procedures failed to rest ore engine power. The pilot turned back toward the departure a irport, and selected an emergency landing area ab out 1 mile from the airport. The airplane touched down on soft tundra covered terrain and received damage to the landi ng gear, fuselage, and wings. An faa airworthiness inspector examined the airplane at t he accident site. The fu el selector was found positioned to the left wing tip fuel tank. The left tip tank did not contain any fuel. No fuel wa s found in the fuel line from the gascolator to the fuel pump. No fuel was found in the line from the fuel pump to th e engine manifold. After recovery, the engine was started, and it developed full

power with, and without, the fuel boas t pump in the "on" position. During the engine run, the left tip tank was selected. The engine continued to run for 1.5 minutes before quitting.

Probable cause: the pilot's improper selection of a fuel tank that did not contain fuel, which resulted in subsequent fuel starvation and loss of engine power. A factor relating to the accidentwas: the inability to reach suitable terrain for a forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA130	0	no	yes	no	yes

Description: the pilot was departing to the west from a remote airport in a tail-wheel equipped airplane. He reported that initially, there was a left quartering wind (about 25 degree s left of the runway heading) at about 25 knots. During the takeoff roll, the pilot held the airplane on the ground for about 1,100 feet and attained an airspeed of 70 mph. He indicated the airplane sudde nly veered off the left side of the runway. The right main landing gear collapsed, and the right wing struck the ground. After the accident, the pilot noticed the wind was blowing from the north at an estimated velocity of 25 knots. The facility directory for the airport included a caution for strong winds, severe turbulence, and possible wind shear.

Probable cause: the pilot's inadequate compensation for wind conditions, andhis failure to maintain directional control of the airplane, which resulted in a ground swerve and overload failure of the right main landing gear. Factors related to the accident were: the crosswind, and sudden windshift.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA133	0	no	no	no	yes

Description: the 29-inch tundra tire equipped airplane was being landed o n a dry, newly surfaced, asphalt runway. The winds were reported to be a 40 degree right crosswind at 6 knots. The pilot stated that there were no problems with the airplane, and that he allowed the airplane to veer left. The airplane departed the runway, struck a berm, and nosed over.

Probable cause: the pilot's failure to maintain directional control while landing the oversize tire equipped airplane on dry, newly surfaced, asphalt.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA134	0	no	yes	no	yes

Description: the pilot and three passengers were departing a remote, priv ate airstrip. The airstrip is 1,000 feet long and 40 feet wide, at an elevation of 1,200 feet mean sea level. It is l ocated in a narrow canyon with steep terrain on the north side, and lower hills on the south side. During the takeoff on a magnetic heading of 130 degrees, the airplane lifted off near the end of the runway. The pilot indicated that af ter lift-off the airplane climbed to about 50 feet above the ground, and suddenly encountered a downdraft. The airpl ane began descending toward the ground, and collided with rough terrain. The pilot indicated the wind conditions at t he tim e of the accident were 040 degrees at 20 knots, with gusts to 25 knots.

Probable cause: the pilot's inadequate evaluation of the weather conditions.factors in the accident were a downdraft, crosswind conditions, and rough/uneven terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA135	0	no	no	yes	yes

Description: the pilot and three passengers were returning to the pilot's remote area fishing lodge in a float equipped airplane. The pilot flew over the lodge about 200 feet above the groun d to alert occupants of the lodge of the airplane's arrival. A witness observed the airplane in a right turn tow ard the river area, where the pilot intended to land and taxi to a lodge boat dock. During the turn, the nose of the airplane suddenly dropped toward the ground. The airplane then descended out of the witnesses view, behind several tre es. The pilot did not remember the accident. The front seat passenger could not remember the crash, but did remember fee ling pushed downward into the airplane's seat during the turn. Following recovery of the airplane, an examination of the engine did not reveal any evidence of a preimpact mechanical malfunction.

Probable cause: failure of the pilot to maintain adequate airspeed, during amaneuvering turn at low altitude, which resulted in an accelerated stall and subsequent collision with the terrain.a factor relating to the accident was: the lack of altitude to recover from the stall.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA138	0	no	no	no	yes

Description: the airplane landed hard and bounced into the air. During th e subsequent touchdown, the nose wheel separated, and the airplane nosed over onto its back. Metallurgical examination of the nose wheel strut and forks revealed overstress fractures. The cargo was not secured, and struck the back se at passenger during the nose over. The aft passenger sustained serious neck injuries. The cargo was loaded on top

of the aft seatbelts, making them unavailable to the aft passenger. The front seat, pilot-rated, passenger did not use the available lap belt or shoulder harness.

Probable cause: the pilot's improper flare and improper recovery from a bounced landing, which resulted in overload failure of the nose gear and a nose over. Factors associated with the accident were: the pilot's failure to follow procedures and directives by neglecting to tie down and secure the load, and his failure to ensure that the passengers had seatbelts available and utilized them.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA140	0	no	no	yes	yes

Description: the pilot aborted the first takeoff attempt in the seaplane when the pilot seat slipped aft. He did not back taxi the seaplane prior to beginning the second takeoff run. A passenger's video depicts the seaplane on the step, a passenger commenting on the shallow water, and the seaplane striking a sandbar located in the middle of the river. The seaplane came to rest inverted in shallow water.

Probable cause: the pilot's selection of an unsuitable takeoff area. Factors were the sand bar and the pilot's failure to use all available waterway for the takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA142	0	no	no	no	yes

Description: the pilot stated that after landing on a calm lake, with speed still on, the seaplane skipped sideways. The right float strut collapsed, the right float partially separated, but the seaplane remained upright. Inspection revealed that the propeller struck the right float, the right wing contacted the water, and the fuselage was damaged. The reason for the initial float separation was not determined. The pilot did not hold a seaplane rating, but stated he had 50 hours of seaplane experience. The passenger was not a pilot.

Probable cause: the inadvertent swerve during landing on calm water. A factor was the pilot's lack of certification in single engine seaplanes.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA149	0	no	no	no	yes

Description: the tailwheel-equipped airplane was rolling out after landing on wet pavement. The airplane was abeam bravo taxiway and still rolling, when the tower controller requested the pilot clear the runway onto bravo. The pilot stated that he should have continued to the next intersection, but instead quickly applied brakes to attempt to stop the airplane. The airplane ground looped to the right, and the left wing struck the ground.

Probable cause: the pilot's abrupt application of brakes during the landing roll.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA154	0	no	no	no	yes

Description: the pilot and passenger were departing a small, remote grave l area in the tail-wheel equipped airplane. The takeoff area, located about 1,700 feet mean sea level, was about 800 feet long, and oriented on an east/west direction. The pilot departed toward the west, and lifted off near the end of the takeoff area. The tail of the airplane struck the tops of several willow trees, about 15 feet above the ground. The elevator received damage, and the pilot was unable to push forward on the control wheel. The airplane then stalled/mushed, and settled onto the ground. The airplane's main landing gear collapsed, and the right wing struck additional willow trees. The pilot reported the wind conditions at the time of the accident were about 090 degrees at 3 knots.

Probable cause: the pilot's selection of unsuitable terrain for takeoff.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97LA157	0	no	no	no	yes

Description: the airplane departed a rough, rocky, gravel bar. During the subsequent landing roll at the pilot's gravel strip, the plane veered to the right. As the plane decelerated, full left rudder and brake input by the pilot did not maintain directional control. The airplane departed the right side of the strip, the left main landing gear separated, and the airplane nosed over. Inspection revealed that the right main landing gear was canted ten degrees to the right, and had been installed using "cherry max" rivets instead of the required solid rivets.

Probable cause: the distorted/misaligned main landing gear, and an improper maintenance repair of the main landing gear. A factor associated with the accident was rough and uneven terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97ta016	0	no	yes	no	yes

Description: the pilot and passenger were landing at the conclusion of a cross-country, state-government flight. The pilot began a straight-in approach and applied carburetor heat about 600 f eet above the ground in preparation for landing. The engine began to run rough. The pilot continued with the approach, a nd about 300 feet above the ground, increased the throttle. The engine lost power, and the pilot performed an emergency landing off the left side of the runway. The weather conditions were clear, temperature was -2 degrees f, and dew point was -8 degrees f. The pilot reported observing visible ice crystals. After recovery of the airplane, an eng ine examination did not disclose any mechanical malfunction. The engine ran at idle rpm with the carburetor heat control in the "hot" and "cold" positions.

Probable cause: the pilot's improper use of carburetor heat, and subsequent loss of engine power. Factors associated with the accident were the presence of ice crystals in the atmosphere, and unsuitable terrain for a forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97ta085	0	no	yes	no	yes

Description: the pilot reported he was returning to his base camp on a re mote lake. He said he misjudged the wind direction, and inadvertently landed his float-equipped airplane downwind, w ith a 15-knot tailwind. He was unable to stop the airplane before it hit the shore. The airplane continued inland abou t 50 feet and struck small trees.

Probable cause: the pilot's misjudgment of the prevailing wind conditions during landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97ta098	0	no	yes	no	yes

Description: the air taxi pilot was landing the float-equipped airplane o n his third trip of the day to the accident location. He said that on the accident flight he landed towards the beach with a tailwind. He touched down too close to the beach, and was unable to stop the airplane before it ran upon the b each and nosed over.

Probable cause: the pilot's misjudgment of the proper touchdown point. A factor associated with the accident was a tailwind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97ta148	0	no	no	no	yes

Description: the 29-inch tundra tire equipped airplane was being landed o n a wet, sandy, gravel bar. The pilot stated that the back seat heater had been blowing hot air on the brake master cyl inders, which had just been serviced. At touchdown, the airplane began to nose over. The pilot attempted to add pow er and keep the tail down with airflow, but the airplane continued over onto its back. Skid marks were measured for 154 feet from the touchdown point.

Probable cause: the excessive pressure in the brake system resulting from heating of the recently serviced hydraulic fluid in the brake master cylinders, and the resultant locked brakes and inability to maintain directional control of the airplane.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA005	0	no	no	yes	yes

Description: the pilot departed on a local flight in the tailwheel-equipp ed airplane with 1/4 tank of fuel visible in the left fuel tank sight gauge. The fuel selector was positioned on the l eft tank. The right tank contained a small amount of fuel. While in cruise flight, the engine suddenly quit, and the p ilot switched to the right fuel tank. The engine started, and ran for another 3 minutes, but quit running a second tim e. The pilot selected an open area of tundra and performed a forced landing. During the landing, the airplane's right main landing gear was broken from the fuselage. The pilot later reported that he departed with 18 gallons of fuel. Th e pilot said he encountered unexpected head winds, and switched fuel tanks to his reserve tank. The engine ran a f ew minutes, and then quit. The pilot report ed an inspection of the airplane revealed a restriction in the fue l gauge, producing a false reading.

Probable cause: the loss of engine power due to the pilot's failure to refuel the airplane prior to fuel exhaustion. A factor associated with the accident was the lack of suitable terrain for a forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA012	0	no	no	yes	yes

Description: the pilot departed on a cfr part 135 cargo flight that inclu ded several stops. During the trip, the pilot indicated he operated the airplane on the right fuel tank for 30 minutes. During the balance of trip, the pilot utilized the left fuel tank. Just prior to landing at the accident destinatio n the engine began to run rough and sputter. The pilot switched the fuel selector from the left fuel tank to the ri ght tank, and

activated the engine boost pump. The engine did not respond, and the pilot switched back to the left tank while activating the engine starter. The pilot noticed the airplane was too high to land at the approach end of the destination airport runway, and he selected an emergency landing area off the departure end of the runway. During the landing, the airplane collided with numerous trees, and received damage to the left wing, fuselage, and landing gear. The director of operations for the operator reported that following the accident he inspected the accident airplane. The inspection revealed no fuel in the left wing fuel tank, and no fuel in the left fuel reservoir tank. The operator indicated there was no mechanical malfunction with the airplane.

Probable cause: the pilot's mismanagement of the airplane's fuel which led to the loss of engine power due to fuel starvation.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA013	0	no	no	no	yes

Description: the pilot was landing on a remote, snow and ice covered runway. Night visual meteorological conditions prevailed. During the touchdown, the airplane landed hard and bounced into the air. When the airplane again touched down, the nose gear collapsed and the right wing struck the ground. The airplane received damage to the nose gear strut, propeller, and a right wing rib.

Probable cause: the pilot's improper flare and recovery from a bounced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA024	0	no	no	no	yes

Description: during the landing roll on a snow covered landing strip, the airplane's skis began to track in a snow machine rut, pulling the airplane to the left. The pilot applied power and full right rudder, but the airplane continued left, striking trees on the edge of the 1,200-foot-long by 12-foot-wide landing strip.

Probable cause: the pilot's selection of unsuitable terrain for landing. A factor was the snow machine ruts creating a rough landing surface.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA025	0	no	no	no	yes

Description: the pilot said that he was landing on a snow and ice covered runway. While on final approach, the airplane descended below the intended glide path and struck a snow berm just short of the runway. He said that as he turned base to final, the far end of the runway was obscured. As he approached the threshold, he felt a sudden drop, and he initiated a go-around, but the airplane settled onto the threshold area.

Probable cause: the pilot misjudged distance/altitude and airspeed, and his delay initiating a go-around. Related factors were the downdraft and snowbank.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA028	0	no	no	no	yes

Description: the pilot-in-command held a private pilot certificate and was seated in the right seat. He did not hold a flight instructor certificate. The airplane's co-owner was a student pilot and was seated in the left seat. During the second touch-and-go landing, with the pilot-in-command allowing the student pilot to manipulate the flight controls, the airplane bounced and ground looped to the right. The left wing contacted the ground, and the airplane nosed down.

Probable cause: the pilot-in-command's decision to relinquish controls to the student pilot in the left seat during practice landings, and the pilot-in-command's failure to maintain directional control. A factor contributing to this accident was the pilot-in-command's lack of certification as a flight instructor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA073	0	no	no	no	yes

Description: the certificated commercial pilot was departing from a river after a day of fishing. The pilot reported that just after takeoff, about 15 feet above the water, two ducks flew into the path of the departing airplane, distracting his attention. The pilot stated t hat the birds passed on the ri ght side of the airplane, about 6 feet from the windscreen. The next thing the pilot recalls was seeing trees that fill ed his entire field of view. The airplane's left wing sponson collided with a stand of trees, pivoted the airplane 180 degrees to the left, and the airplane settled into a larger stand of trees. The airplane sustained substantial d amage to the wings and fuselage.

Probable cause: the pilot's diverted attention during takeoff, and his failure to maintain a proper climb rate. A factor associated with the accident was the presence of birds.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA078	0	no	no	yes	yes

Description: the pilot and three passengers, departed on an air taxi flig ht over remote terrain. While in cruise flight about 2,200 feet, the engine oil pressure began to drop, and the engine oil temperature began to rise. The pilot decided to divert to the nearest airport. The engine quit running, and the pi lot select ed an emergency landing area on a sand bar along a river that contained several willow trees. During the lan ding, the airplane received damage to the wings and fuselage. The engine had accrued 1,491 hours since an overh aul. During that time, seven engine cylinder changes were performed by company maintenance personnel. An examination of the engine revealed the crankshaft was broken along the aft, lower edge of the number two cheek journal, at the forw ard radius of the number two main bearing journal. The fracture line was straight and flat, through the full dimens ion of the number two cheek journal, and was oriented perpendicular to the longitudinal axis of the crankshaft. T he number two main bearing was broken and flattened. The number two main bearing saddle was flattened and distorted. The left and right engine case halves mating surface exhibited galling/fretting at the number two main journal bo lt holes.

Probable cause: the improper installation/undertorquing of the engine crankcase bolts by company maintenance personnel, and a subsequent fracture of the engine crankshaft. A factor in the accident was unsuitable terrain for a forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA090	0	no	yes	no	yes

Description: the certificated commercial pilot was landing on a remote gr avel runway. During a telephone conversation with the national transportation safety board investigator-in-charge, on july 1, 1998, the pilot reported that while landing to the we st, he inadvertently flew further down the runway and landed about midfield of the 1,150 feet long runway. He stated that after touchdown he was unable to stop the airpla ne before it went down an embankment at the end of the runway, and nosed over. In his written statement to the nts b dated september 1, 1998, the pilot reported that while landing to the west, he encountered an unexpected "wind chan ge" from the east. He said that the tailwind caused the airplane's ground speed to accelerate, and after touchdown, he was unable to stop prior to reaching the runway end. The airplane's left wing sustained substantial damage.

Probable cause: the pilot's failure to attain a proper touchdown point during landing. A factor associated with the accident is the presence of a variable wind condition, and the pilot's decision not to perform a go -around.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA099	0	no	no	no	yes

Description: the pilot had leveled off in cruise and was leanin g the fuel mixture when the mixture control ceased to have effect. The pilot stated that the engine began to lose power, then q uit. The airplane nosed over during the forced landing in tundra. Postaccident inspection revealed the mixture control cable had unscrewed from the mixture control arm. The cable had been replaced 238 hours prior to the accident, and was inspected 142, and 44 hours prior to the accident. The service manual specified the jam nut that locked the cable t o the arm be torqued to 15 +/- 2 inch-pounds. There was no safety wire requirement for this linkage. If disconnected, g ravity would allow the mixture control arm to fail to idle-cutoff.

Probable cause: the disconnection of the mixture control cable from the mixture control arm. Fact ors associated with this accident were the inadequate 100 hour inspections performed by company mechanics.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA101	0	no	no	no	yes

Description: the pilot experienced binding in the flaps during landing. U nable to find a problem, he decided to takeoff on his return flight. During initial climb, the manually operated f laps abruptly retracted. The pilot was unable to hold the flaps in the extended position to climb, and the airplane co ntacted trees located in the departure path. Investigation revealed that the flap position locking pin, part number 480 - 715 (59-040-187-1500), had fallen from its hole, but the retaining roll pin was still in place. The only way to remov e this pin from the hole is to first remove the retaining pin, or fracture it in two pieces. The missing pin was not r ecovered, but a photograph shows a similar dimensioned pin lying below the flap handle assembly.

Probable cause: the fracture of the flap handle position locking pin, which resulted in an uncommanded raising of the flaps during takeoff. A factor was the pilot's decision to takeoff with asuspected problem in the flap system.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA148	0	no	no	no	yes

Description: the certificated airline transport pilot was conducting a cf r part 135 cargo flight to a remote airport. He was making a visual approach during dark night conditions in a twin-eng ine turboprop airplane. On the downwi nd portion of the landing approach, the pilot selected flaps down, but nothing happened. The pilot's trouble shooting did not remedy the flap problem, and he elected to make a flaps-up landing. Th e airplane settled onto the runway with the landing gear retracted. The airplane received damage to the underside, a ft end of the fuselage, the engine nacelles, and propellers. The airplane is equipped with a landing gear war ning horn, and a red cautionary annunciator light in the landing gear handle. The operator reported there was no mec hanical malfunction with the airplane.

Probable cause: the pilot's failure to follow the aircraft checklist, and aninadvertent wheels up landing. A factor was the pilot's distraction due to a malfunction of the flap system

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
Dca90ma030	0	no	no	yes	no

Description: on june 2, 1990, at 09:37 alaskan daylight time, markair, in c., flight 3087, a boeing 737-2x6c, registered in the us as n670ma, crashed abo ut 7.5 miles short of runway 14, unalakle et, alaska, while executing a localizer approach to that runway. The flight originated at 0828 at anchorage internat ional airport, anchorage, alaska. Instrument meteorological conditions existed at the time, and the fligh t was on an ifr flight plan. The captain, the first officer, and a flight attendant sustained minor injuries. A nother flight attendant sustained serious injuries. There were no passengers on board, and the aircraft was destroyed. The flight was operated under far part 121. (see ntsb/aar-91/02 for further information)

Probable cause: deficiencies in flightcrew coordination, their failure to adequately prepare for and properly execute the unk loc rwy 14 nonprecision approach and their subsequent premature descent.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90FA039	1	no	yes	yes	no

Description: the airplane crashed shortly after transitioning from vfr to ifr conditions, and receiving an ifr clearance to the final approach fix for ils/dme runway 18 at bethel.

Probable cause: the pilot's loss of control of the airplane because of spatial disorientation. The weather conditions prevailing at the time were factors relating to the accident.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90FA047	0	no	yes	no	yes

Description: the scheduled flt depd bethel, ak, with a wx dispatch releas e. When the flt reached the destn (chevak, ak), the station manager (a non-certified wx observer) adzd the flt crew to n ot attempt a lndg, because the wx was not good. According to the flt crew, however, the fog was not obscuring the rwy & they elected to make an apch. According to the pilot (pic), a high sink rated developed on short final & he did n ot apply power. He believed the lndg flare would have arrest the sink rate. However, the acft lndd hard on the rgt main gear, causing it to sep & dmg the rgt main wing strut. The rgt wing settled to the surface & the acft yawed to the rgt, veered off the rwy & was further dmgd. The load manifest did not comply with 14 cfr part 135.63(c) or the co mpany's operations manual.

Probable cause: improper flare by the pilot (pic) during the landing/flare. The weather condition with fog was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90FA061	1	no	no	yes	yes

Description: the airplane was in a steep turn to the left, when it stalle d & crashed on a frozen lake. The plane was substantially damaged, the pilot was seriously injured & the passenger rec eived fatal injuries.

Probable cause: failure of the pilot to maintain adequate airspeed, while maneuvering at low altitude, which resulted in a stall.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90FA086	1	no	no	no	yes

Description: immediately after departure the pilot declared an emergency, and the aircraft was observed turning right, back toward the airport, and losing altitude. The aircraft crashed 1/4 m ile se of the departure end of runway 18. The on-scene investigation showed that the fuel selector position appeare d to be off or on the left tip tank. There was still movement on the selector to the left, indicating it may have been on the left tip tank.

Probable cause: the pilot's failure to maintain airspeed during an emergencylanding following an engine power loss. The loss of engine power was due to an improper fuel selector position which resulted in fuel starvation. A contributing factor was the pilot's decision to turn and attempt to return to the airport.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90FA105	2	no	no	no	yes

Description: the pilot elected to take off from a remote lake in gusty, t urbulent wind conditions. The airplane was estimated to be 245 pounds over gross allowable weight, and only four seats and seat belts were available for the six people aboard. Witnesses said that the airplane was pulled o ff the lake abruptly and climbed at a steep attitude until approximately 20 feet agl. The airplane then struck th e water hard with the right float and turned upside down. Rescuers included a pilot/physician and lodge owner wh o promptly reached the scene and successfully administered cpr to an unconscious and not breathing adult f emale and male juvenile.

Probable cause: the pilot's failure to follow proper procedures and directives (excessive flaps); failure to operate the airplane within the allowable gross weight limitations; improper compensation for wind conditions and failure to maintain minimum safe flying speed, resulting in a stall/mush.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA035	0	no	no	no	yes

Description: during a landing on a 1700' snow covered rwy, the acft touch ed down at about midfield & the plt was unable to stop on the remaining rwy. Subsequently, the acft hit a snowbank & was damaged.

Probable cause: improper planning/decision by the pilot. Factors related to the accident were: the pilot's failure to attain the proper touchdown point for landing, his excessive airspeed, his failure to go around while he still had sufficient airspeed, the snow covered runway, and the snowbank.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA038	0	no	no	no	yes

Description: during an approach to land, the pilot lost control of the ai rplane. The airplane then stalled and crashed on tundra. The airplane was substantially damaged and the pilot was not injured.

Probable cause: pilot-in-command's failure to maintain airplane control.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA041	0	no	no	yes	yes

Description: the private pilot lost control and crashed while landing in a remote area covered with rough crusted snow. The pilot failed to provide the ntsb with information concerning the accident.

Probable cause: the pilot failed to maintain directional control during landing. Contributing factors were the rough terrain, and the pilot's lack of total and recent experience in that model airplane.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA057	0	no	no	no	yes

Description: during touchdown on the ramp, the pilot lost control of the helicopter. The helicopter rolled over on its side, the pilot was not injured, and the helicopter was substantia lly damaged. Examination of the helicopter revealed the right torision bar had collapsed.

Probable cause: pilot-in-command's failure to maintain control of the helicopter during touchdown.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA058	0	no	no	no	yes

Description: the pilot stated that the airplane ran out of fuel. After to uchdown, the plane nosed over on its back.

Probable cause: improper planning/decision by the pilot, which resulted in fuel exhaustion, due to an inadeqaute supply of fuel.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA096	0	no	no	no	yes

Description: the non-scheduled, all cargo, air taxi flight was landing at the mining strip and upon touchdown the pilot-in-command released the yoke with his left hand and gr abbed the nose steering tiller. The pilot-in-command stated that before he could apply reverse thrust, the nose o f the airplane came up off the ground and the airplane began to veer to the right. He applied left rudder and power to the right engine, but the airplane left the right side of the runway.

Probable cause: the pilot-in-command's failure to maintain control of the airplane through the touchdown and landing phase.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA108	0	no	no	yes	yes

Description: the pilot reported a complete loss of power while in cruise flight. The airplane sustained substantial damage in the ensuing forced landing. An inspection of the engine reve aled that three piston rod assemblies had fractured, causing the loss of power.

Probable cause: total loss of engine power caused by the failure of the piston rod assemblies.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA114	0	no	no	no	yes

Description: during the landing roll, the pilot lost control of the airpl ane and ground looped. The left main landing gear collapsed, causing the left wing to hit the runway. The airp lane was equipped with 30 inch oversized tundra tires.

Probable cause: the pilot's failure to maintain directional control during the landing roll.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA119	0	no	no	yes	yes

Description: while at ground idle after dropping off a survey crew, the p ilot observed that the right skid had sunk into the soft tundra. While attempting to free the skid at full rpm the he licopter rolled right 90 deg and the main rotor struck the ground.

Probable cause: the pilot selected unsuitable terrain. The wet & soft tundrawas a factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA123	0	no	no	no	yes

Description: the pilot made a wheels landing on a soft dirt strip. With t he departure end of the strip rapidly approaching, he applied heavy braking, causing the airplane to nose over. The airplane was equipped with 30 inch oversized tires.

Probable cause: the improper use of brakes by the pilot during the landing roll.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA124	0	no	no	yes	yes

Description: the engine quit during flight and the pilot landed the airpl ane on tundra. The pilot believes that the #3 connecting rod failed. The airplane was not recovered.

Probable cause: loss of engine power for undetermined reasons.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA125	0	no	no	no	yes

Description: the pilot stated that during the initial climbout from a riv er gravel bar the airplane stalled, crashed back onto the gravel bar, and nosed over.

Probable cause: the pilot-in-command's failure to maintain flying speed during climbout.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA143	2	no	yes	no	yes

Description: the float-equipped airplane was found floating upside down i n a lake where the pilot and passenger had been hunting. Strong winds, rough swells, and water spouts report edly existed.

Probable cause: pilot lost control of the airplane as a result of encountering severe weather either during takeoff or landing. Contributing to the accident was the severe weather, rough water surface, and self-induced pressure to fly by the pilot.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA145	0	no	no	no	yes

Description: the 57-year-old private pilot stated that the left wheel/bea ring failed during landing, causing him to lose control and ground loop the airplane. The left inside wheel bearing and the wheel were extensively damaged.

Probable cause: failure of the left inside wheel bearing, for undetermined reasons.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA149	0	no	no	yes	yes

Description: after touchdown on the gravel bar, the pilot lost directiona l control of the airplane. The airplane then ground looped to the right and nosed over on its back. The airplane was substantially damaged. The pilot and passenger were not injured.

Probable cause: the pilot-in-command's failure to maintain directional control on landing. Contributing to the accident was unsuitable terrain selected by the pilot for landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA153	0	no	no	no	yes

Description: the pilot stated that he lost directional control of the air plane during the landing roll. The airplane subsequently ground looped. The airplane was substantially d amaged. The pilot and passenger were not injured.

Probable cause: the pilot-in-command's failure to maintain directional control of the airplane on landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA156	0	no	no	yes	yes

Description: during takeoff on a gravel bar airstrip, the airplane struck a large rock on the departure end of the airstrip. The airplane was substantially damaged. The pilot and passen ger were not injured.

Probable cause: the pilot-in-command's failure to understand the performancedata during takeoff. Contributing to the accident was the unsuitable terrain not being identified by the pilot-in-command.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA168	0	no	no	yes	yes

Description: the pilot stated that the airplane ran out of fuel during th e flight. The pilot then made an emergency landing on the tundra. The airplane was substantially damaged. The p ilot and passenger were not injured.

Probable cause: the pilot-in-command's improper in-flight planning and ultimate fuel exhaustion.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA171	0	no	no	yes	yes

Description: during the takeoff roll on a gravel bar, the pilot lost dire ctional control of the airplane. The airplane swerved to the right and slid over a 100 foot drop, tail first.

Probable cause: the pilot-in-command's failure to maintain directional control of the airplane during the takeoff roll. The rough/uneven gravel bar was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA177	0	no	no	no	yes

Description: during cruise flight, the engine quit. After an emergency la nding on the tundra, the airplane nosed over on to its back. Examination of the engine revealed no mechanical m alfunctions or failures. However, water was found in bo th fuel tanks and fuel lines.

Probable cause: fuel contamination. A contributing factor was the inadequateaircraft preflight by the pilot.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA181	0	no	yes	no	yes

Description: the pilot stated that he encountered a left gusty crosswind just before touchdown, causing him to push forward on the control yoke, and the nose wheel to make a hard touch down. The nose gear then collapsed, causing the airplane to nose over.

Probable cause: the improper use of elevator controls by the pilot.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA189	1	no	yes	yes	no

Description: bfr flt fm anchorage to bethel, ak, non-inst rated plt was a dzd that vfr flt wasn'trcmdd. En route, he conversed with mcgrath fss while vfr-on-top & indcd he would dscnd thru hol e in clds to lnd/refuel at lime, ak. At 1948 adt, he rprtd en route again, 150 mi east of bethel. At 2054, plt ctcd bet hel fss for tfc & wx adzy & rprtd 40 mi east in "a little bit of fog." abt 10 min ltr, he said he was getting disorie nted, reqd assistance, then rprtd "60 mi out." he indcd he couldn't see to set transponder to 7700 (at ngt). At 2106, h e rprtd at 6000' & asked abt fcst cig & "how hi can i go to get up out of this if i get some reference." rdo ctc was lo st for abt 12 min, then plt said he was at 3700' & still 58 mi fm bethel. No df strobe or radar info was obtained, thoug h a df steer was bgn at 2119, but was not attained. Acft impacted 45-50 deg rising trrn abt 100' blo mtn ridge at 320 0' lvl. No preimpact part failure/malfunction was fnd. Exam revealed: eng rpm 2699, throttle/mixture full fwd, airspd 30 kts. Prop was fnd 15' uphill fm wreckage with extsv dmg.

Probable cause: continued vfr flight by the pilot into instrument meteorological conditions (imc), and his failure to maintain altitude and clearance above mountainous terrain. Factors related tothe accident were: darkness, adverse terrain and weather conditions, the pilot's lack of instrument experience, and the pilot becoming lost or disoriented.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91FA142	0	no	no	yes	yes

Description: the pilot in command performed a preflight and checked the oil by removing the dip stick/oil filler cap. After 10 to 15 minutes of flight time, the pilot noticed a decrease in t he torque indication and engine oil pressure. He elected to return to dillingham and enroute the engine lost more oil pressure and "coughed" twice and the pilot feathered the propeller and landed on the tundra. Upon landing the airpla ne nosed over. The on site inspection showed that the left, lower side of the fuselage was covered with oil and the oil dip stick/filler cap was not installed in the filler neck. It was resting on the inside of the upper cowling because th e airplane was upside down. The brief shows that the pilot was the holder of an airline transport pilot certificate bec ause the computer database program will not accept a commercial p ilot rating while showing a scheduled 14 cfr 135 , passenger/cargo type of operation. The pilot is only the holder of a commercial pilot certificate.

Probable cause: the pilot's inattentive preflight inspection which resulted in his failure to properly secure the engine oil tube filler cap resulting in the loss of engine oil and oil pressure and the pilot's failure to properly compensate for wind conditions during the forced landing. Contributing to the accident was the engine failure and subsequent forced landing on soft terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA006	0	no	yes	yes	yes

Description: during an attempted takeoff, the 219-hour private pilot fail ed to obtain sufficient flying speed and crashed off the end of a remote snow-covered dirt strip. He had landed t here on the previous day after encountering low visibility and whiteout conditions.

Probable cause: the pilot's premature lift off at an inadequate airspeed. Contributing to the accident was the unplowed snow on the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA015	0	no	no	no	yes

Description: the pilot stated that during the approach to the runway he s talled the airplane. The airplane crashed approx imately 50 feet off the left side of the runway into a snowbank.

Probable cause: the pilot in command's failure to maintain airspeed during approach resulting in an inadverrtent stall annd uncontrolled descent into the ground.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA033	0	no	no	no	yes

Description: the pilot stated that about 2 seconds after he touched down with the wheel/ski equipped airplane, the left main landing gear collapsed at the upper attaching point. Examin ation of the left outboard landing gear support (cessna part number 0713495 64) found that it had failed due to preexisting cracks. The operator reported that most of the 4,520 hours on the airplane and the failed support were accumulated with the airp lane operating on rough terrain with wheel/skis installed.

Probable cause: the collapse of the left main landing gear during the landing roll due to preexisting cracks.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA038	0	no	yes	yes	no

Description: the pilot was conducting a vfr flight at 500 feet agl in ins trument meteorological conditions. A turn was initiated to reverse course back to the departure airport when the pilot encountered instrument flight conditions (whiteout), and subsequently collided with the terrain.

Probable cause: the pilot-in-command's failure to maintain vfr flight in instrument meteorological conditions while maneuvering on a vfr flight plan. Factors related to the accident was the pic's failure to evaluate the weather conditions that existed.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA040	0	no	no	no	yes

Description: this was an on demand air taxi cargo flight and the chief p ilot stated that during the landing roll the pilot lost directional control of the airplane causing the aircraft to veer to the right striking a snowbank.

Probable cause: the pilot's failure to maintain directional control of the airplane on landing. Contributing to the accident was the snowbank.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA055	0	no	no	yes	yes

Description: the pilot-in-command stated that she encountered a downdraf t on short final. The airplane first touched down about 4 feet short of the runway, bounced, then landed hard on the r unway causing all landing gear to separate from the fuselage. The point of first touchdown was sloped down and away from the runway about 30 degrees. The end of the runway was about 100 feet from a river bank which dropped ra pidly about 20 feet.

Probable cause: was the hard landing caused when the pilot encountered a do wndraft during the final approach portion of the landing. Contributing to the accident was the downdraft and the dirt/river bank just short of the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA057	0	no	yes	no	yes

Description: while in the traffic pattern to the airport, the engine qui t. The airplane crashed into a wooded area one half mile from the airport. Examination and engine run revealed no mec hanical malfunction or failure. The pilot did state that he believed it was carburetor ice.

Probable cause: carburetor icing and the pilot's failure to follow proper p rocedures and directives pert aining to carburetor heat.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA060	0	no	no	no	yes

Description: during cruise flight, a securing rope came loose and wrappe d itself around the tail rotor pitch control. During the autorotation, ground contact was made in a level altitude, b ut the hard landing caused the main rotor blades to sever the tailboom.

Probable cause: the pilot's failure to secure the cargo prior to the flight . Contributing to the accident was the rough, uneven terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA065	0	no	no	no	yes

Description: the pilot stated that during the takeoff run, he veered lef t to avoid running over a big bump. The left wing then hit some small trees causing him to lose directional control and ground loop the airplane. The right wing then struck the ground. The takeoff area was an old abandoned fish cannery strip.

Probable cause: the pilot's failure to maintain directional control during the attempted takeoff. Contributing to the accident was the rough takeoff area and the trees along the side of the takeoff area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA066	0	no	no	yes	yes

Description: the pilot-in-command stated that the fuel flow began to flu ctuate and the engine began to run rough. He switched fuel tanks and the engine smoothed out. He then switched back to the original fuel tank and he stated the engine oil pressure went to zero and the engine began to vibrate. He e lected to shut down the engine and execute a forced landing. Subsequent examination revealed that the engine oi l pump was working, that there was a sufficient oil quantity in the engine and that there was water in the fule injector distributor.

Probable cause: was fuel contamination. Contributing factors are the engin e vibrations and the rough vegetation upon which the airplane landed.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA070	0	no	no	yes	yes

Description: the pilot departed dillingham, alaska, en route to anchorage , alaska. He made an en route stop at an off-airport location 10 miles north of iliamna, alaska. During the landi ng, the airplane nosed over.

Probable cause: the pilot's decision to land on an unimproved area. The sof t terrain was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA080	0	no	no	no	yes

Description: during the aborted takeoff, the pilot lost directional cont rol of the airplane because the left main tire dug into the soft sand. The airplane then nosed over on its back.

Probable cause: the pilot's failure to maintain directional control of the airplane during the aborted takeoff. Contributing to the accident was the soft, rough, and uneven terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA108	0	no	no	no	yes

Description: during landing, the pilot-in-command lost the effectiveness of his left brake. He elected to ground loop the airplane rather than run off into the tundra. Examination of the left brake assembly revealed that the brake disc had separated from the assembly.

Probable cause: the loss of directional control on the ground caused by the failure of the left brake disc. Contributing to the accident was the pilot-in-command's intentional ground loop of the airplane.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA118	0	no	no	no	yes

Description: the pilot inadvertently retracted the landing gear instead of the flaps. This took place between the landing roll and takeoff roll of a touch and go. The airplane came to rest o n the runway approximately mid field.

Probable cause: that the pilot inadvertently retracted the landing gear dur ing the takeoff roll. Contributing to this accident was that the checklist was not followed.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA122	0	no	no	yes	yes

Description: while maneuvering at low level, the engin e quit. After an emergency landing on the tundra, the airplane was substantially damaged. Examination of the airplane by the pi lot revealed water in both fuel tanks and carburetor.

Probable cause: fuel contamination and the pilot's failure to perform an ad equate preflight of the airplane. Contributing to the accident was the rough, uneven terrain of the tundra landingarea.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA125	0	no	no	no	yes

Description: during the takeoff on the water, the pilot lost control of the airplane and the left wing tip struck the water. The airplane nosed over on its back and sank into the lake.

Probable cause: was the pilot-in-command's failure to maintain directional control of the airplane during the takeoff run. Contributing to the accident was the rough water.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA131	0	no	yes	no	yes

Description: shortly after lift off from the water, the airplane stalled and settled back to the water. Just before touchdown the airplane struck the bank.

Probable cause: the pilot's failure to attain proper airspeed. Contributin g to the accident was the high wind encountered during takeoff and the terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA135	0	no	yes	no	yes

Description: the pilot stated that just after the airplane lifted off th e ground, the 30 knot headwind changed to a crosswind. The airplane was blown off the side of the strip and crashed int o the bushes.

Probable cause: the pilot lost control of the airplane. Contributing to th e accident was unfavorable wind and turbulence.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA143	0	no	yes	no	yes

Description: the airplane had just lifted off the water when the pilot l ost control of the airplane. The airplane then stalled and crashed on the tundra. After ground impact, the airplane no sed over on its back.

Probable cause: the pilot's failure to obtain proper airspeed. Contributin g to the accident was the pilot's improper compensation for wind conditions and the unfavorable wind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA151	0	no	yes	no	yes

Description: the pilot reported that just after liftoff from the water, h e encountered a changing wind condition that caused the airplane to settle back onto the water. With insufficient s topping room on the lake, he jerked the airplane back into the air in order to clear the 4 to 6 foot high shoreline. T he airplane then settled to the ground and nosed over about 40 yards from the lake.

Probable cause: the pilot's failure to maintain airspeed. Contributing to the accident was the unfavorable wind conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA153	0	no	no	no	yes

Description: the pilot stated that just after touchdown on the river, th e airplane's right float hit a submerged log. The airplane then cartwheeled and cam e to rest upside down in the water.

Probable cause: the airplane's float hit a submerged log during landing on the river, which resulted in the pilot losing control of the airplane and crashing into the water.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA158	0	no	yes	no	yes

Description: according to the initial interview with the pilot and one p assenger, he was beginning his takeoff roll when he lost control and the airplane ran off the side of the runway and nosed over. The pilot stated that the tail wheel steering spring had failed. The accident was not reported until octo ber 1991, and the airplane was repaired before the tailwheel spring could be examined.

Probable cause: the loss of control during the takeoff se quence caused by t he failure of the tail wheel steering spring. Factors contributing to the accident were the gusty wind conditions and soft terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92FA002	0	no	no	yes	yes

Description: during cruise flight the pilot heard a loud pop in the engi ne compartment and the engine stopped producing power. During the subsequent forced landing on the tundra, the airp lane nosed over and received substantial damage. Examination of the engine revealed that the crankshaft timin g gear, part number lw-15269, was extremely worn and all but nine of the gear teeth were missing. According to textr on lycoming, the gear was the original manufactured gear.

Probable cause: a power loss over unsuitable terrain which resulted in a nose over.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92FA022	1	no	yes	yes	no

Description: the wreckage was located on the northeast side of halfway m ountain heading approximately 270 degrees at the 1600 foot level. The accident site is located within two miles of the initial approach fix for the localizer/dme runway 16 approach at mcgrath. The mea for the dme arc is listed as 3 600 feet above mean sea level. The sector obstruction clearance altitude is listed as 3100 feet above mean sea le vel.

Weather for the area, airmet sierra, indicated that mountain tops would be obscured and that ceilings would occa sionally be 1500 feet broken. There were reports of snowshowers in the area o f sufficient intensity that would n ot allow the search aircraft to fly through the snowshowers.

Probable cause: the pilot in command's improper inflight planning/decision and his attempt to fly vfr through imc conditions. Factors contributing to the accident were the snow, whiteout conditions, and darkness.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92FA106	1	no	no	no	yes

Description: the airplane rolled 200-300 ft before becoming airborne in a very nose high attitude. It maintained this attitude, made a right, then a left bank, and fell to the ground in a nose high attitude. The cargo consisted of eight 55-gal drums of fuel, laid on their side and secured by one cargo strap runn ing fore and aft and another cargo strap running diagonally across the barrels. The tie down ring ultimate strength rati ng was 1600 pounds. The weight of the cargo was 2863 pounds. Three of the cargo hooks associated with the cargo s traps were found still attached to the tie down rings, and one hook and tie down ring were not located. Post-impact fir e destroyed the cargo straps, and the barrels were strewn randomly through the cabin/cargo area. According to the manu facturer, the davis tie down ring installation is not approved by the manufacturer. The modification should have b een accomplished under a supplemental type certificate. The logbooks showed only an entry. The certificated max gross we ight was calculated to have been exceeded by 324.8 lbs.

Probable cause: inadequate security of the cargo which shifted rearward during the takeoff roll. Factors which contributed to the accident were: the over gross weight condition, and the improper alteration of the tie down rings by the overhauling maintenance facility.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92FA116	6	no	yes	yes	no

Description: the destination camp is located about 50 mi sw of the depart ure lodge, and is separated by mountains with some peaks over 4,000 ft asl. The general area weather included low cei lings. The operator stated that shortly before the accident he observed the youth creek weather "better than 400 feet... ", and told the pilot that it appeared good enough to make the flight. The pilot stated that as he flew up youth creek he could see that the pass was closed by low clouds and attempted to reverse direction. The pilot stated he "made a hard steep turn, and the airplane stalled..." the pilot said the weather was about 800 ft ceiling and visibility of 1 mi. When the pilot was admitted into the hospital immediately following the accident, he was diagnosed as havi ng an insulin dependent diabetic condition. His medical records contain no evidence of, and the pilot denied any kno wledge of, any pre-accident diabetic condition.

Probable cause: the pilot's delayed decision in reversing course and his failure to maintain airspeed during the maneuver. Factors related to the accident were: mountainous terrain and a low ceiling.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92FA159	0	no	no	no	yes

Description: shortly after takeoff, at 1,000 ft agl, the pilot experience d airframe vibration and a grinding sound. He entered autorotation, and at 200 ft agl the tail rotor and part of t he t/r gear box separated from the helicopter. It then rotated approximately 720 deg and impacted the ground. One o f the t/r blades was missing the abrasion strip. An airworthiness directive (ad) & service bulletin (sb) were in effect directing installation of rivets within 300 hrs to prevent possible loss of tailrotor control. Due to seasonal use, helicopter had less than 160 hrs since issuance of the ad. Tail rotor blade found intact was 40% debonded, but woul d pass a "tap test" iaw manufacturer's sb. Failed blade estimated to be 90% debonded. Daily visual inspection requir ed by sb reportedly did not detect debonding in progress.

Probable cause: the separation of the tail rotor abrasion strip and the sub sequent total loss of the tail rotor. Factors contributing to the accident were: insufficient manufacturer's maintenance design changes, inadequate aircraft equipment design by the manufacturer and insufficient standards of the faa certification organization.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA007	0	no	yes	no	yes

Description: during the landing roll, the airplane began sliding toward the right side of the snow and ice covered runway. The pilot then added power to make a go around. After reaching about 15 feet agl, the airplane settled and landed hard. The nose and left main landing gear collapsed and the left w ing hit the ground. Note: for data entry purposes only block 74 in the ntsb factual report form 6120.4 reflects tha t the pilot is airline transport certificated. The pilot's actual certification is commercial.

Probable cause: the pilot's failure to maintain airspeed during the aborted landing. Contributing to the accident was the unfavorable wind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA008	0	no	yes	no	yes

Description: the pilot stated that while on a slow shallow approach to a short landing strip, he encountered a downdraft just short of the strip. The airplane subsequently landed hard.

Probable cause: the pilot's failure to maintain airspeed. Contributing to the accident was the downdraft.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA010	0	no	yes	no	yes

Description: the captain elected to takeoff on runway 14 at chevak. Acc ording to the first officer, the station manager, and the director of flight operations the wind was blowing 090 to 10 0 degrees at 35 to 40 knots. The captain stated the wind was from 060 to 090 degrees at 22 to 25 knots gusting to 35 knots. The captain elected to use 20 degrees of flap for takeoff, however, the flight manual recommends that only 10 degrees of flap be used for a crosswind takeoff. The flight manual states that the demonstrated crosswind compone nt for this airplane was 20 knots but is not a limiting fa ctor. The captain performed the takeoff and upon lift off the airplane weather vaned and began to drift to the right. Simultaneously the left wing rose into the air and t he right wing dragged the ground. According to the director of flight operations other company flights in the a rea canceled their flights earlier due to high winds.

Probable cause: the high crosswind condition, the pilot in commands inabili ty to compensate for the wind conditions, and his failure to follow company procedures and the procedures recommended in the aircraft flight manual. Factor relating to the accident was the captain's overconfidence in his personal ability.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA012	0	no	no	no	yes

Descriptio n: the pilot stated he observed a log on the approach end of th e runway and tried to miss it during the touchdown but the aircraft nose wheel & fuselage contacted the log.

Probable cause: the pilot's improper in flight planning and decision in thathe att empted to touchdown too close to the log.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA014	0	no	no	yes	yes

Description: the pilot in command was attempting to survey an intended l anding area by performing a low approach. He made his turn from the water toward the beach at 200 above ground level. During the turn the airspeed began to drop and the airplane began to descend and power was applied. The pilot rolled th e airplane wings level and the airplane continued to de scend until it struck the ground. The wind was light and variable.

Probable cause: the pilot's failure to maintain an airspeed above stalling during maneuvering flight. A factor relating to the accident was operating at an altitude inadequate in which t oeffect recovery.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA016	0	no	yes	no	yes

Description: the pilot stated that as the upwind main landing gear touch ed down, the upwind wing began to rise and he was unable to control it. He attempted a go around but the upwind wing co ntinued upward and the airplane impacted the ground on the right main landing gear, the downwind gear, and the right wi ng. The airplane wreckage departed the runway and slid across a frozen lake. The wind was a direct crosswind blowi ng at 10 to 12 knots with gusts to 15 knots.

Probable cause: the pilot's failure to adequately compensate for the wind d uring landing. Factors were the crosswind and the attempted go around

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA025	0	no	no	no	yes

Description: the pilot stated that just after touchdown the wheels went i nto a snowdrift about 2 ft deep which pulled the airplane sideways. He applied full power to make a go -around, then hi t another snowdrift about 12-16 in deep. The airplane then slid off the runway. The operator's dispatcher stated he tel ephoned the airport & was told "to the best of his knowledge the runway condition was good". The airport person responsible for plowing the runway stated that the snowplow had broken down, and told the dispatcher to tell th e pilot to take a good look at the runway before landing. It was too dark to check the runway earlier in the morning. There was no notam in effect pertain ing to the runway condition. The alaska supplement flip cautions " runway cond ition not monitored, recommend visual inspection prior to using." the accident

occurred 15 minutes after the beginning of civil twilight, and 44 minutes before official sunrise. The pilot stated because of the light conditions he did not see the snowdrifts before before hitting them.

Probable cause: the pilot selected unsuitable terrain. Factors contributing to the accident were the dawn light condition and the snow on the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA031	0	no	yes	no	yes

Description: while on final approach for landing, the pilot reported tha t the flight encountered turbulence and a strong crosswind. The pilot continued the approach until the flight was on short final and approximately 50 to 80 feet agl when the airplane suddenly banked approximately 60 degrees t o the left. The pilot tried to correct with full opposite controls and full power; however, the left wing struck the g round. The pilot regained control of the airplane and initiated a go-around. The pilot continued the go -around and landed without further incident.

Probable cause: misjudged wind information. Factors to the accident were: t urbulence, crosswi nd and flight into known adverse weather.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA045	0	no	no	no	yes

Description: the pilot stated that while at cruise flight at 3,700 feet msl, he made a power reduction in preparation to descend to 3,000 feet. At that time he heard a loud bang and the engin e quit suddenly and completely. No problems were found with the fuel or the airplane's fuel or electrical systems. The engine operated normally on a test stand, and was disassembled and later returned to service with no problems noted.

Probable cause: the total loss of engine power for undetermined reasons. A contributing factor was the lack of suitable terrain on which to make the forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA049	0	no	no	no	yes

Description: as the ski equipped airplane touched down on the snow cover ed frozen river, the left main landing gear broke at the axle, and the airplane nosed over. Investigation rev ealed t hat the left ski retaining nut and its cotter pin were missing. This allowed the ski to partially slide off the ax le in flight. The pilot stated that this was the second time that the airplane had been sabotaged or vandalized.

Probable cause: the left main landing gear ski being partially disconnected at the time of the landing. Contributing factors were the inadequate preflight by the pilot, and the snow covered landing area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA052	0	no	no	no	yes

Description: after liftoff the pilot failed to maintain flying speed. T he airplane stalled and hit the ground before the pilot could recover.

Probable cause: the airplane stalled when the pilot failed to maintain flyi ng speed.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA056	2	no	no	no	yes

Description: the pilot had landed at the kalskag airport earlier - someti me after 2200 - and was observed drinking heavily from a bottle which was finished and thrown away. He then took anot her fifth of whiskey out from behind his seat. The passenger asked the pilot to fly her to russian mission. The pilot stated he wanted to sober up first. The passenger coaxed the pilot "like crazy" into taking h er. The pilot the n took the open fifth from behind his seat and put it in the passenger's lap. He then agreed to fly her to russian mi ssion. At 0200 an elt signal was picked up by a satellite. The airplane had crashed on a frozen lake 12 mi west of kals kag. Damage was consistent with a high speed, nose low impact. The pilot's blood alcohol level was 209 mg/dl, and a 0.035 ug/ml level of tetrahydrocannabinol carboxylic acid (marijuana) was also detected in his blood. The passenger's blood alcohol level was 95 mg/dl.

Probable cause: the pilot's failure to maintain control of the airplane as aresult of his physical impairment due to alcohol. A factor was the dark night.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA070	0	no	no	no	yes

Description: the pilot reported that during the takeoff ground run, a la rge raven flew towards the propeller. The pilot maneuvered the airplane to avoid colliding with the bird and lost direc tional control. The airplane travelled off the runway and nosed over in the tundra.

Probable cause: directional control was not maintained. A factor to the acc ident was: a bird.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA086	0	no	no	no	yes

Description: the pilot of the piper pa-22 had trouble maintaining direct ional control after touchdown, and did not take adequate remedial action to keep the aircraft from ground looping and dragging a wing.

Probable cause: the pilot's failure to maintain directional control, and hi s inadequate remedial action.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA095	0	no	no	no	yes

Description: just after making the initial takeoff climb power reduction the pilot noticed that the engine oil pressure was indicating zero. Before he could land at his departure airp ort the engine seized. An off airport forced landing resulted in substantial damage to the airplane. The engine oil filter adapter had separated from the oil pump housing, and all engine oil was lost. The threads on the adapter and housing were worn and damaged. The adapter had last been installed using water pump pliers instead of the special wre nch as per the cessna maintenance manual.

Probable cause: engine failure due to total oil loss. Contributing to the accident were the separation of the oil filter adapter from the oil pump due to improper maintenance procedures and non adherence to recommended directives by company maintenance personnel, and the unsuitable terrain on which to m ake the forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA099	0	no	no	no	yes

Description: the pilot stated that he landed on the beach near a set net site to discuss hauling fish from the beach. During the landing roll the airplane's tailwheel hooked a fish net anch or rope. The rope was the same color as the beach sand, gray. The airplane was decelerating rapidly and the rope br oke and the pilot could not control the airplane. The airplane ground looped on the beach causing damage to the ri ght wing, aileron and right stabilizer.

Probable cause: the pilot's selection of unsuitable terrain for landing. A factor was the hidden obstruction on the surface of the landing area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA102	0	no	yes	no	yes

Description: the pilot of the cessna 180 was taking off from a sandy bea ch with a 90 degree crosswind that he estimated to be 15 knots, gusting to 30. He stated that a gust caused the nose to weathercock, and by the time he reduced the power, the aircraft entered loose sand. The right main landing gear le g was pulled from the landing gear box, and the right wing was bent during the aircraft's impact with the surface..

Probable cause: the pilot's failure to maintain directional control. Facto rs include gusty crosswind conditions.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA108	0	no	no	yes	yes

Description: the pilot bent down to retrieve the fire extinguisher betwe en his feet and to replace it in the bracket located under the pilot's seat. When he looked up he saw a hill in front of the airplane. He pulled up and the airplane struck the hill but continued to fly. He pulled back on the yoke and a dded full power and the airplane entered the clouds. He noticed he was about to stall the airplane so he lowered the nose and the airplane immediately struck the hill again and nosed over.

Probable cause: the pilot in command's failure to maintain visual lookout and clearance from terrain. A factor was the pilot diverted his attention to secure a loose fire extinguisher.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA109	0	no	no	no	yes

Description: the airplane was in cruise flight when the pilot noticed a slight fire smell. The engine began to lose power slowly and would not respond to engine control inputs. The pilot l anded on a gravel bar and had to extinguish the fire in the engine accessory case with the fire extinguisher and dirt. The airplane has not been recovered and the engine has not been examined.

Probable cause: the fire in the engine accessory drive assembly. Factor wa s the rough an uneven forced landing area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA118	0	no	no	yes	yes

Description: the pilot stated that while cruising at approximately 500 f eet agl he experienced a total loss of engine power. The subsequent forced landing in a shallow lake resulted in subs t antial damage to the airplane. After recovery, the engine operated normally.

Probable cause: the total loss of engine power for undetermined causes, and the unsuitable terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA122	0	no	yes	yes	no

Description: the airplane collided with the up slope side of a mountain, at the 500 foot level, and came to rest on the opposite side of the 1,000 foot high mountain. The pilot reported th at while at cruise flight the engine sput tered, so he landed on the mountainside. No problems were found with the engine. Marginal vfr and ifr weather conditions were forecast for the area. To the immediate left of the crash s ite were miles of open sea level terrain.

Probable cause: the pilot attempted vfr flight into imc weather conditions. Contributing to the accident were the mountainous/hilly terrain, and the low ceiling weather condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA125	0	no	no	no	yes

Description: the pilot said that the airplane failed to gain flying spee d before running off the end of the 1300 foot gravel strip and nosing over on the tundra. The pilot estimated the weig ht of the airplane at the time of the accident to be 122 poun ds below the certificated maximum gross weight.

Probable cause: the pilot's failure to abort the takeoff. Contributing to the accident was the rough/uneven terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA126	0	no	no	yes	yes

Description: the pilot stated that just after takeoff, and about 10 feet above the ground, the engine gradually lost partial power, and the airplane crashed into the bushes just off the end of the remote strip. Information surrounding the acc ident was very minimal and sketchy. Several unsuccessful attempts were made to get more information from the pilot and passenger. The wreckage was not recovered, and the cause of the power loss was not determined.

Probable cause: the partial loss of engine power for undetermined reasons. Contributing to the accident was the unsuitable terrain.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA132	1	no	yes	yes	yes

Description: after aborting the second or third attempted landing on a m ountain ridge hunting strip, the pilot turned downwind. Several seconds after rolling out of the turn on downwind, a nd while at about 10 feet above the ground, the airplane's tail went up and the airplane nosed to the ground. Immediate ly up on impact the airplane burst into flames and was destroyed by fire. Three ground witnesses estimated that th e gusty wind was blowing at 30 to 50 knots.

Probable cause: the pilot failed to maintain airspeed and stalled the airpl ane. Contributing to the accident was the unfavorable wind condition.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA139	0	no	no	no	yes

Description: during the takeoff ground run the pilot lost directional co ntrol of the airplane, left the right side of the runway, and collided with the terrain. Before taxiing for takeoff, the pilot was told by the airport based fss that the winds were gusting in excess of 30 knots. The pilot elected to at tempt to takeoff with the crosswind instead of using the intersecting runway, which was also available for use at the time.

Probable cause: the pilot's improper preflight planning/preparation, his im proper compensation for wind conditions, and his failure to maintain directional control during the takeoff run. Contributing to the accident was the crosswind.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA140	0	no	no	no	yes

Description: the pilot stated that after getting airborne the airplane w ould not climb any higher than about 2 feet above the ground without the stall warning horn sounding. About 20 fe et past the end of the runway the airplane's right main landing gear hit and was sheared off by a 3 foot high tundra berm. The pilot then reduced power and landed on the paralleling beach, during which the nose landing gear collap sed. The pilot also said that the airplane was delayed in getting airborne by the standing water and mud puddles on th e runway.

Probable cause: the pilot's improper preflight planning/decision, and his d elay in aborting the takeoff. Contributing factors were the berm and the standing water on the runway.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA150	0	no	no	yes	yes

Description: the lodge employee pilot reported that he took off from a sm all lake toward rising terrain that he could not outclimb. The pilot reported that he tried to turn around below the le vel and clipped a tree with his wing tip and the spreader bars on the floats. Aircraft impacted in marshy area near th e lake. The pilot said that he believed he misjudged the takeoff and possibly accepted a tailwind component.

Probable cause: pilot exercised poor preflight planning/preparation by taki ng off with a tailwind component. Factors relatin g to the accident were: the unfavorable wind in the area and the rising hilly/mountainous terrain in the takeoff path.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA161	0	no	no	yes	yes

Description: the purpose of the flight was to transport a hunting guide a nd equipment to a new location. The pilot reported that while performing a landing on "ridge top tundra" a gust of w ind hit the airplane on the left side. The pilot said that he made an aileron correction and added full power for a go around. However, the left wing dragged the ground followed in short order by the propeller and the plane's nose hitting the ground and the airplane going over onto its back.

Probable cause: the pilot in command not maintaining control of the airplane. A factor in the accident was the wind gusts.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA167	0	no	yes	no	no

Description: the pilot in command/flight instructor reported that the en gine began to run rough about two hours into the flight. Full carburetor heat was applied and the roughness disappear ed. About 30 minutes later, the engine roughness reappeared. Engine instrument indications were normal. The engine coughed and sputtered, but little fluctuation in rpm was noted. Full carburetor heat was once again applied b ut the engine quit and attempts at restarting were not successful. The engine started and ran normally (restricted to low rpm due to motor mount damage) during a post accident static ex amination and operational check. All engi ne controls were intact. No foreign material/contaminants was found in the wing tanks, engine fuel strainer, and carbu retor finger screen. The temperature/dew point at the time of the accident was 44 deg and 30 deg respectively. Acc ording to the carb icing prob chart serious icing at cruise power was possible at the ambient conditions.

Probable cause: the carburetor icing conditions and the delay by the pilot in command/cfi in using carburetor heat.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA168	0	no	no	no	yes

Description: the pilot determined that it would be better to depart into the wind and climb over a 15 foot obstacle of trees. He attempted to lift off prematurely and dragged the heal of a float. The pilot said that at this time, he "should have pulled the power off and rejected the takeoff". However, he pushed the nose of the airplane down, regained airspeed, and lifted off at the edge of the lake. As the airplane lif ted off, the bottom of the floats scraped the edge of the shoreline. At an altitude of about 5 feet, the airplane col lided with trees. In a report filed with the ntsb, the pilot stated that he misjudged the distance required for a s afe takeoff.

Probable cause: the pilot in commands failure to abort the takeoff and his misjudgment of the distance required to perform a safe takeoff under the conditions present.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA170	0	no	no	yes	yes

Description: the pilot experienced a spool down on the turbine engine. Ex amination of the engine revealed that the air compressor scroll to tee tube assembly compressor end fitting had broke n. Metallurgical examination of the part showed that there were no material irregularities, that the tube bend developm ent and linear measurements varied from the engineering drawings, and that the tube assembly failed in a fatigue mod e. The origin was on the tube o.d. approximately 0.020 inch below the 'b' end flare radius.

Probable cause: the failure of the compressor end of the air compressor scroll to tee tube assembly causing the engine to spool down. The forced landing in eneven, unprepared, and lightly forested terrain were factors.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91ga087	0	no	no	no	yes

Description: the pilot stated that while adjusting the power approach, h is heavy police coat sleeve switched the magneto switch to off, which caused a complete engine failure. After touchdow n on a gravel bar, the airplane nosed over on its back.

Probable cause: the pilot inadvertently switched the magnetos off during th e flight. Contributing to the accident was the rough, uneven terrain with loose gravel.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91ia039	0	no	no	yes	yes

Description: the pilot stated that while cruising at 10,000 feet msl, the engine quit without warning and he was unable to restart it. A forced landing was made on a mountainside. After remov ing a large piece of ice from the gascalator, and making some temporary repairs, the engine started and ran normally.

Probable cause: the loss of engine power due to the ice in the fuel strainer/gascalator. Contributing was: the inadequate preflight preparation by the pilot, and unsuitable terrain on which tomake the forced landing.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91ia052	0	no	no	no	yes

Description: during liftoff at quinhagak, alaska, the pilot felt a bump. He circled the runway but did not see anything. Upon landing at eek, alaska, the airplane veered to the right and left the runway. The right main landing gear lower strut assembly was missing. The assembly was located at quinhagak . Examination of the parts showed that the center torque link bolt had failed.

Probable cause: the failure of the center torque link bolt.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA146	0	no	no	yes	yes

Description: while at 200 feet msl, the engine quit and the helicopter c rashed on the tundra. Examination of the helicopter fuel systems revealed the fuel tanks were empty.

Probable cause: was fuel exhaustion due to the pilot-in-command's improper preflight planning. Contributing to the accident was the rough and uneven tundra landing site.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92ia147	0	no	no	no	yes

Description: the left cockpit door behind pilot the position opened into airstream at 50 ft agl on initial climbout. The door deparated and damaged left propeller and fuselage skin. The pilot completed single engine procedures and proceded imc to alternate and completed ifr approach and landing without further incident. The door was not found. It was undetermined if the door latch malfunctioned for personnel f ailed to close the latch. Cockpit lighting does not illuminate as a function of the door latch. Thee is no warni ng light to warn of an unlatched door. The door hinges are mounted on the aft frame of the door opening, thus swinging rearward in front of propeller.

Probable cause: the unlatching of the left crew entrance door by means unde termined and the lack of adherence to door check items by the pilot in command on the requisite checklists. A factor relating to the incident was the separation of the door from the frame when opened into the slipstream.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC93ia085	0	no	no	no	yes

Description: the right main gear upper strut assembly separated on landin g. Metallurgical examination showed that the strut assembly failed due to stress corrosion cracks occurring across the f orged parting plane.

Probable cause: the failure of the main gear upper strut assembly due to stress corrosion.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC94ia020	0	no	no	no	yes

Description: the airplane began to diverge to the right of the runway cen terline during the initial takeoff run at a ground speed of between 20 and 30 knots. The pilot-in-command (pic) glanced at the engine instruments and observed an asymmetry in torque between the plane's two engines. The pic reported tha t in his haste to accomplish the abort, he was not able to get the left power lever back to the ground idle position pr ior to the impact with the northwest arresting barrier pit. The pic said that he depressed the nose wheel steering butto n but did not push the button on the engine power lever to engage the nose wheel steering. The reason for the delayed o r decreased torque from the no. 2 engine could not be conclusively determined.

Probable cause: the pilot-in-command did not maintain control of the airplane and did not perform the appropriate procedures for an aborted takeoff. A factor in the incident was the asymmetryin power between the plane's two engines for undetermined reasons.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA112	0	no	no	no	yes

Description: the pilot was attempting to lift an external load. The sling cable was wrapped around the aft part of the right skid. As the pilot increased the hover height, the cable became ta ut. He attempted to jettison the load, but the cable would not release. He then landed the helicopter on the external l oad.

Probable cause: failure of the pilot to ensuring the sling cable was free ofthe skid before lifting off into a hover, which allowed the cable to become wrapped (entangled) around the skid.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC96ia085	0	no	no	no	yes

Description: the pilot landed at the naknek airport after a local flight. He was following another airplane to the parking ramp. He waited and allowed the other airplane to clear the runway first. The pilot stated he looked for vehicles before crossing the road that transects the parking ramp access tax iways. The road parallels the runway just outside of the runway lights. As the pilot started to taxi, an automobile passed in front of his a irplane. He applied the brakes and nosed down. The vehicle did not stop and the operator was l ocated later. The operator was an unlicensed youth. The road is within the runway safety area as defined in the regu lations. There were no warning signs po sted on the road or the taxiway warning of a hazard or obstruction.

Probable cause: the inadequate visual lookout of the vehicle driver, and theinadequate visual lookout of the pilot. A factor was the state of alaska's failure to provide taxiway hazard warning signs which would alert vehicles of the active aerodrome.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC90LA102	0	no	yes	no	yes

Description: the pilot reported directional control problems while landin g in a crosswin d of 70-80 degrees at 15 knots or greater. The airplane touched down in the center of the runw ay, but quickly veered to the left and went off the runway. An air traffic controller who witnessed

the accident said that it appeared that a gust of wind caused the right wing to rise shortly after landing, and that the a irplane then veered to the left. An examination of the left main landing gear, tire, and brake assembly disclos ed no anomalies with any of the systems or structure.

Probable cause: the pilot f ailed to adequately compensate for the prevailingwind conditions and his failure to maintain directional control. A contributing factor was the strong crosswind component.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91ia037	0	no	yes	no	yes

Description: the pilot attempted to get current weather and airport info rmation prior to and during flight concerning the runway at shageluk, alaska. The most current information could not be confirmed and the flight service specialist did not believe the information was current. Upon reaching shageluk , the crew overflew the airport and it appeared to be suitable for landing. Upon landing, the left propeller stru ck the snow berm and the airplane veered into the bank. According to th e flight crew, the runway was plowed only 26 to 35 feet in width.

Probable cause: the accident was the pic's failure to properly determine therequired width of runway needed by their airplane and inadequate snow removal. Contributing to the accident was the snow berm and the copilot's misjudgment of runway width.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91ia102	0	no	yes	yes	no

Description: the pilot was maneuvering the airplane to avoid weather. H e attempted to fly over a hill and a downdraft began to push him into the hill. He applied full power but was unabl e to recover. Consequently, he executed a landing on the hilltop. Wind in the area was reported to be from the south at 60 knots. The pilot reported the wind to be from 110 degrees at 12 knots gusting to 20 knots.

Probable cause: the pilot-in-command's attempted flight into known adverse weather conditions. Contributing to the accident was the high and gusty winds in the accident area.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92LA110	0	no	no	no	yes

Description: the pilot noticed that at liftoff the airplane's nose was h igher than normal. He looked at the flap indicator and noticed he had selected full flaps. He attempted to retract some of the flaps and accidently selected full up. The airplane hit the tundra and came to a stop. According to th e cessna 172 pilot's operating handbook, the use of ten degrees of flaps is reserved for takeoffs from soft or rough fields. It further states that the flaps should not be retracted during the initial climb.

Probable cause: the pilot in command not following the procedures outlined in the pilot's operating handbook.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98ia004	0	no	no	no	yes

Description: the pilot was entering a left downwind for landing at a remo te airport. The wind conditions were 25 knots with gusts to 35 knots. During the turn, the pilot utilized full ailer on deflection, and noticed the aileron momentarily jammed. He was able to force the control wheel to the right, unjammi ng the aileron. After landing, the pilot began to taxi to the ramp. Due to a strong crosswind, the pilot deflected th e ailerons fully to the left. The aileron once again jammed, and the pilot was unable to force the control wheel to the right. The airplane's ailerons utilize balance weights that are attached to the interior surface of the lea ding edge of the aileron. Five screws are inserted through the leading edge skin of the aileron, through the balance we ight, and into self-locking nuts attached to a nut strip assembly. Company maintenance personnel reported 1 screw wa s missing. Three of the remaining 4 screws were loose, and backed out sufficient distance to contact the trailing edge of the wing, forward of the aileron. The left aileron was jammed in a full, leading edge down, position. The cessna 2 08b pilot information manual details a preflight inspection that includes an examination of the ailerons as part of a wa lk-around inspection of the airplane. In addition, the balance weights should be inspected during every 100-hour in spection. A review of the manufacturer's service condition report data base, and the federal aviation administratio n ma lfunction and defect report system did not reveal any other reported incidents of aileron jamming.

Probable cause: inadequate inspection of the aileron by company maintenance personnel, and the pilot's inadequate preflight inspection of the aileron, which led to the jamming of the left ailerondue to loose balance weight retaining screws.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95FA104	1	yes	no	no	no

Description: witnesses observed two airplanes, a cessna 172a and a piper pa-18, both equipped with floats, collide with each other while both were maneuvering in flight about 400 feet above t he water. After the collision, the airplanes broke apart and fell into the water. The pilots of both airplanes were s potting for fish. One eyewitness located directly below the collision on a fishing vessel observed the piper pa-18 strik e the cessna 172a from behind. He reported that the cessna 172a was in a left turn at the time, and the piper pa-18 was level. An examination of the

wreckage revealed that the right float and propeller of the piper pa-18 impacted the un derside of the left wing of the cessna 172a. No preimpact mechanical malfunctions were found during the wreckage exami nation. Weather conditions were day vfr, and both pilots were well-rested. Toxicology tests showed the piper pa-18 pi lot's blood had 85 ng/ml of codeine, and the presence of an opiate was detected in his urine.

Probable cause: inadequate visual lookout by the pilot of the piper pa-18. The pa-18 pilot's diverted attention was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95FA104	1	yes	no	no	no

Description: witnesses observed two airplanes, a cessna 172a and a piper pa-18, both equipped with floats, collide with each other while both were maneuvering in flight about 400 feet above t he water. After the collision, the airplanes broke apart and fell into the water. The pilots of both airplanes were s potting for fish. One eyewitness located directly below the collision on a fishing vessel observed the piper pa-18 strik e the cessna 172a from behind. He reported that the cessna 172a was in a left turn at the time, and the piper pa-18 was level. An examination of the wreckage revealed that the right float and propeller of the piper pa-18 impacted the un derside of the left wing of the cessna 172a. No preimpact mechanical malfunctions were found during the wreckage exami nation. Weather conditions were day vfr, and both pilots were well-rested. Toxicology test s showed the piper pa-18 pi lot's blood had 85 ng/ml of codeine, and the presence of an opiate was detected in his urine.

Probable cause: inadequate visual lookout by the pilot of the piper pa-18. The pa-18 pilot's diverted attention was a related factor.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC95LA043	0	yes	no	no	yes

Description: the cessna was substantially damaged when it nosed down afte r encountering jet blast from a boeing 737 that initiated taxi for takeoff. Ramp personnel marshalling the 737 from t he ramp stated that the cessna was not observed until after the 737 moved ahead about 10 feet and started turning to the right toward the taxiway. The ramp personnel noted that the cessna was within the confines of the airline's marked p erimeter area at the time of the accident.

Probable cause: the cessna pilot's failure to maintain sufficient clearance from the transport airplane while taxiing, and the ground personnel's inadequate lookout while marshalling the transport airplane from the ramp.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97FA037	1	yes	no	no	no

Description: the pilot of cessna 207a, n800ga, was returning to his compa ny base, passing about 2 miles north of a remote airstrip that was along the route of flight. The airstrip did not hav e any control tower. [communications around an uncontrolled airport are conducted on a common traffic advisory frequency (ctaf)]. The pilot of a short sc7, n451sa, announced his departure from the same airstrip on the ctaf, and took off i n a northerly direction. He then began a climbing right turn toward the same destination as the cessna 207a was proc eeding. The two airplanes collided in mid-air, about 1.49 nautical miles east -northeast of the airstrip, which was abo ut 18.3 miles west of their destination. They were observed spiraling downward from about 800 ft above the ground. Both airplanes were found lying flat and upright on a frozen lake, entangled together at the accident site. The cessna's burned wreckage was lying on top of (and positioned toward the aft third of) the burned wreckage of the short sc7.

Probable cause: inadequate visual look-out by the pilots of both airplanes, which resulted in their failure to see-and-avoid e ach other's airplanes.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC97FA037	1	yes	no	no	no

Description: the pilot of cessna 207a, n800ga, was returning to his compa ny base, passing about 2 miles north of a remote airstrip that was along the route of flight. The airstrip did not hav e any control tower. [communications around an uncontrolled airport are conducted on a common traffic advisory frequency (ctaf)]. The pilot of a short sc7, n451sa, announced his departure from the same airstrip on the ctaf, and took off i n a northerly direction. He then began a climbing right turn toward the same destination as the cessna 207a was proc eeding. The two airplanes collided in mid-air, about 1.49 nautical miles east -northeast of the airstrip, which was abo ut 18.3 miles west of their destination. They were observed spiraling downward from about 800 ft above the ground. Both airplanes were found lying flat and upright on a frozen lake, entangled together at the accident site. The cessna's burned wreckage was lying on top of (and positioned toward the aft third of) the burned wreckage of the short sc7.

Probable cause: inadequate visual look-out by the pilots of both airplanes, which resulted in their failure to see-and-avoid each other's airplanes.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC98LA023	0	yes	no	no	yes

Description: the pilot had landed on the east/west runway at the rural ai rport, and was back-taxiing to a ramp/roadway area. The ramp area is "l" shaped, and located between the approach en d of the east/west runway, and the approach end of a second, northwest/southeast runway. The pilot was planning to stop the airplane near a waiting school bus that was parked in the ramp area. Movement through the area is not c ontrolled. A second airplane was waiting in the same ramp area to taxi to a fuel pump. Its engine was running at idle power. The pilot of the second airplane reported he planned to wait until the accident airplane was clear of the runway before proceeding, and did not intend to fly. The pilot of the accident airplane taxied into the ramp area, bu t did not see the second airplane. The pilot of the accident airplane reported that flat light conditions made i t difficult to see the second airplane that was painted white and blue. The left wing of the accident airplane coll ided with the turning propeller of the second airplane. The alaska airport/facility directory contains remarks about the airport that include the airport is unattended. It says, in part: "the runway condition is not monitored. Unco ntrolled vehicular traffic on runways. No line of sight between runways or waterways. Aircraft on east side of runw ay 14/32 may be in safety area."

Probable cause: the pilot's fa ilure to maintain an adequate visual lookout. Factors in the accident were flat lighting conditions, and inadequate airport facilities.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA062	0	yes	no	no	yes

Description: the pilot stated that during an attempted takeoff, he lost directional control of the airplane. The airplane then exited the runway. The wind was reported as 15 to 20 knots, at a heading of 100 degrees.

Probable cause: the pilot's failure to maintain direct ional control of the airplane during the takeoff roll. Contributing to the accident was the high winds.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC91LA100	0	yes	no	no	yes

Description: the pilot stated that the airplane landed approximately 20 feet short of the runway. Just before coming to a stop, the airplane nosed over on its back. At the time of the acc ident, the wind was 180 degrees at 20 knots.

Probable cause: the pilot misjudged the proper touchdown. Contributing to the accident was the gust of wind on final approach.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92ia100	0	yes	yes	no	no

Description: penair flight 4266 was cleared for a localizer dme approach to runway 19. The airp lane broke out of the clouds at 800 feet msl at 4.8 dme from the airport. The crew immediately saw an airplane directly in front, and after evasive action the airplanes passed within 100 feet of each other. The spec ial weather observation, taken one minute prior to the near mid air but not yet transmitted, showed the control zone bel ow visual meteorological conditions. However, the previous hourly observation, and the most current transmitted observa tion, showed that the control zone was under visual m eteorological conditions.

Probable cause: the pilot in command's failure to maintain a visual lookout the visual lookout that was not maintained by the pilot of . Factors were the drizzle and fog and the impossibility the other airplane. Factors were the drizzle and fog and of updating the recorded weather information by atc personnethe impossibility of updating the recorded weather informatil. On by atc personnel.

Report Number	Fatalities?	ADSB	Weather	GPS	Other Causes
ANC92ia100	0	yes	yes	no	no

Description: penair flight 4266 was cleared for a localizer dme approach to runway 19. The airplane broke out of the clouds at 800 feet msl at 4.8 dme from the airport. The crew immediately saw an airplane directly in front, and after evasive action the airplanes passed within 100 feet of each other. The spec ial weather observation, taken one minute prior to the near mid air but not yet transmitted, showed the control zone bel ow visual meteorological conditions. However, the previous hourly observation, and the most current transmitted observa tion, showed that the control zone was under visual meteorological conditions.

Probable cause: the pilot in command's failure to maintain a visual lookout the visual lookout that was not maintained by the pilot of . Factors were the drizzle and fog and the impossibility the other airplane. Factors were the drizzle and fog and of updating the recorded weather information by atc personnethe impossibility of updating the recorded weather informatil. On by atc personnel.

Appendix B. Airports in the Capstone Area

Table B-1. Capstone Area Airports

Name	Type	Use	Owner	Runways	Lighting	Services	Attendance Schedule
Akiachak	Airport	Public	Alaska DOT&PF	GRVL-P, 11/29, 1625' x 50' WATER, E/W, 5000' x 300'		none	Unattended
Akiachak	Seaplane Base	Public	Public Domain	WATER, NW/SE, 5000' x 500'		none	Unattended
Akiak	Airport	Public	Alaska DOT&PF	GRVL-G, 03/21, 3200' x 75'	RDO-CTL	none	Unattended
Alakanuk	Airport	Public	Alaska DOT&PF	GRVL-G, 18/36, 2200' x 55'	RDO-CTL	none	Unattended
Aleknagik	Seaplane Base	Public	Moody	WATER, E/W, 10000' x 1000'		fuel	Unattended
Aleknagik /New/	Airport	Public	Alaska DOT&PF	GRVL-G, 15/33, 2070' x 90'		fuel	Unattended
Aleknagik Mission School	Airport	Private	AK Conf of 7th Day Adventists	GRVL-DIRT, 03/21, 1200' x 25' GRAVEL, 09/27, 1150' x 35' TURF-GRVL-P, 11/29, 1250' x 50'		none	Unattended
Tripod (Aleknagik)	Airport	Public	Public Domain	GRVL-DIRT-P, 18/36, 850' x 40' WATER, 05W/23W, 3000' x 400'		none	Unattended
Aniak	Airport	Public	Alaska DOT&PF	ASPH-G, 10/28, 6000' x 150'	DUSK-DAWN	fuel, minor airframe repair	All/Mon-Sat/0800-1600
Anvik	Airport	Public	Alaska DOT&PF	GRVL-P, 17/35, 2910' x 75'	RDO-CTL	none	Unattended
Anvik	Seaplane Base	Public	Public Domain	WATER, E/W, 2000' x 500'		none	Unattended
Atmautluak	Airport	Public	Alaska DOT&PF	GRAVEL-F, 15/33, 2000' x 30'		none	Unattended
Bear Creek 3	Airport	Public	Public Domain	GRVL, 15/33, 1675' x 40'		none	Unattended
Bethel	Seaplane Base	Public	Public Domain	WATER, NE/SW, 3000' x 500'		minor airframe & powerplant repair	Unattended
Bethel	Airport	Public	Alaska DOT&PF	GRVL-G, 11/29, 1850' x 75' ASPH-G, 18/36, 6398' x 150'	DUSK-DAWN	fuel, minor airframe & powerplant repair	Oct-Apr/All/0500-2130, May-Sep/All/0630-2130
Hangar Lake (Bethel)	Seaplane Base	Public	Public Domain	WATER, N/S, 2600' x 1500'		none	Unattended
Big Mountain	Airport	Private	U.S.	GRAVEL, 07/25, 4200' x 145'		none	Unattended
Cape Newenham LRRS	Airport	Private	U.S. Air Force	GRVL, 14/32, 3950' x 150'	RDO REQ	none	All/All/Daylight
Cape Romanzof LRRS	Airport	Private	U.S. Air Force	GRAVEL, 02/20, 3990' x 135'	RDO REQ	none	All/All/All
Chefornak	Airport	Public	Alaska DOT&PF	WATER, 05W/23W, 4000' x 500' GRVL-F, 16/34, 2500' x 35'	DUSK-DAWN	none	Unattended
Chevak	Airport	Public	Alaska DOT&PF	GRVL-F, 14/32, 2610' x 40' WATER, 18W/36W, 2000' x 400'	RDO-CTL	none	Unattended
Chuathbaluk	Airport	Public	Alaska DOT&PF	GRVL-F, 14/32, 1560' x 45'		none	Unattended
Clarks Point	Airport	Public	Alaska DOT&PF	GRVL-P, 08/26, 2600' x 85'		none	Unattended
Colorado Creek	Airport	Private	Tolvo Rosander	GRAVEL, 14/32, 3250' x 100'		none	Unattended
Crooked Creek	Airport	Public	Alaska DOT&PF	GRVL-G, 13/31, 2000' x 60'		fuel	Unattended
Dillingham	Airport	Public	Alaska DOT&PF	ASPH-G, 01/19, 6404' x 150'	DUSK-DAWN	fuel, minor airframe & powerplant repair	All/All/0800-1600
Shannons Pond (Dillingham)	Seaplane Base	Public	Alaska DNR	WATER, NE/SW, 1400' x 100'		none	Unattended
Eek	Airport	Public	Alaska DOT&PF	GRVL-P, 17/35, 1400' x 35'		none	Unattended
Bartletts (Egegik)	Airport	Private	Lorrie Bartlett	GRVL, 03/21, 1700' x 75'		none	Unattended

Table B-1. Capstone Area Airports

Name	Type	Use	Owner	Runways	Lighting	Services	Attendance Schedule
Egegik	Airport	Public	City Of Egegik	GRVL, 11/29, 2800' x 75' GRAVEL-G, 11/29, 3000' x 75'	DUSK-DAWN	none	Unattended
Ekuk	Airport	Private	Choggiung Ltd	GRVL-DIRT, 01/19, 1200' x 40'		none	Unattended
Ekwok	Airport	Public	Alaska DOT&PF	GRVL-G, 02/20, 2720' x 75'		none	Unattended
Emmonak	Airport	Public	Alaska DOT&PF	GRAVEL-G, 16/34, 4400' x 75'	DUSK-DAWN	fuel	Unattended
Flat	Airport	Public	Alaska DOT&PF	TURF-GRVL-F, 07/25, 4045' x 114'		minor airframe & powerplant repair	Unattended
Golden Horn Lodge	Seaplane Base	Public	Golden Horn Lodge	WATER, NW/SE, 5000' x 1500'		none	Jun-Oct/All/All
Goodnews	Airport	Public	Alaska DOT&PF	GRVL-G, 05/23, 2850' x 80'		none	Unattended
Grayling	Airport	Public	Alaska DOT&PF	GRAVEL-G, 15/33, 2315' x 60'	RDO-CTL	none	Unattended
Holy Cross	Airport	Public	Alaska DOT&PF	GRAVEL-G, 01/19, 4000' x 100'	DUSK-DAWN	none	Unattended
Hooper Bay	Airport	Public	Alaska DOT&PF	ASPH-G, 13/31, 3300' x 75'	DUSK-DAWN	none	Unattended
Igiugig	Airport	Public	Alaska DOT&PF	GRVL-G, 05/23, 3000' x 75' GRVL, 09/27, 4000' x 140'	RDO-CTL	none	Unattended
Kalakaket Creek AS	Airport	Private	Public Domain	GRVL, 18/36, 1200' x 60'		none	Unattended
Kalskag	Airport	Public	Alaska DOT&PF	GRVL-G, 06/24, 3198' x 60'	RDO-CTL	none	Unattended
ANS Hospital (Dillingham)	Heliport	Public	US DEPT OF HEW	TURF, H1, 200' x 100'		none	Unattended
Kasigluk	Airport	Public	Alaska DOT&PF	GRVL-F, 17/35, 3000' x 60'	RDO-CTL	none	Unattended
Lake Brooks (Katmai NP)	Seaplane Base	Public	US Dept Of Interior	WATER, ALL/WAY, 5000' x 4000'		none	Jun-Sep/All/All
King Salmon	Airport	Public	Alaska DOT&PF	ASPH-F, 11/29, 8500' x 150' ASPH-G, 18/36, 4000' x 100' WATER, NW/SE, 4000' x 500'	DUSK-DAWN	fuel, major airframe & powerplant repair	All/Mon-Fri/0800-1600
Kipnuk	Airport	Public	Alaska DOT&PF	GRAVEL-G, 15/33, 2120' x 35'	RDO-CTL	none	Unattended
Koggiung	Airport	Public	Koggiung Cannery	DIRT, 18/36, 1000' x 40'		none	Unattended
Koliganek	Airport	Public	Alaska DOT&PF	GRVL, 09/27, 3000' x 75'	RDO-CTL	none	Unattended
Kongiganak	Airport	Public	Alaska DOT&PF	GRVL-F, 18/36, 1880' x 35'		none	Unattended
Kotlik	Airport	Public	Alaska DOT&PF	GRAVEL-F, 16/34, 2145' x 20' GRVL-F, 06/24, 4350' x 110'		none	Unattended
Kulik Lake	Airport	Public	US Dept Of Interior	WATER, 18W/36W, 5000' x 5000' DIRT, 04/22, 600' x 50'		none	May-Sep/All/Daylight
Kvichak /Diamond J/	Airport	Public	Alaska Packers Assoc	DIRT, 13/31, 800' x 50' GRVL-G, 06/24, 1750' x 35'		none	Unattended
Kwethluk	Airport	Public	Alaska DOT&PF	WATER, 07W/25W, 5000' x 500'		none	Unattended
Kwigillingok	Seaplane Base	Public	Public Domain	WATER, NW/SE, 2000' x 300'		none	Unattended
Kwigillingok	Airport	Public	Alaska DOT&PF	GRVL-F, 15/33, 2500' x 35' GRVL-P, 03/21, 1800' x 40'		none	Unattended
Levelock	Airport	Public	Alaska DOT&PF	GRVL-P, 11/29, 1900' x 45'		none	Unattended

Table B-1. Capstone Area Airports

Name	Type	Use	Owner	Runways	Lighting	Services	Attendance Schedule
Lime Village	Airport	Public	Alaska DOT&PF	GRVL-G, 09/27, 1475' x 60'		none	Unattended
Manokotak	Airport	Public	Alaska DOT&PF	GRVL-G, 01/19, 2740' x 75'	RDO-CTL	none	Unattended
Marshall	Airport	Public	Alaska DOT&PF	GRAVEL-F, 11/29, 1940' x 30'		none	Unattended
Mc Grath	Airport	Public	Alaska DOT&PF	ASPH-P, 07/25, 1720' x 100' ASPH-P, 16/34, 5435' x 150'	DUSK-DAWN	fuel, major airframe & powerplant repair	All/Mon-Fri/0800-1700
Mc Grath	Seaplane Base	Public	Public Domain	WATER, N/S, 4000' x 350'	DUSK-DAWN	fuel, minor airframe & powerplant repair	Unattended
Mekoryuk	Airport	Public	Alaska DOT&PF	GRVL-G, 05/23, 3070' x 75'	DUSK-DAWN		Unattended
Moore Creek	Airport	Private	Don Harris	GRVL-DIRT, 03/21, 1200' x 100'			Unattended
Mountain Village	Airport	Public	Alaska DOT&PF	GRVL-G, 02/20, 2520' x 60'	RDO-CTL		Unattended
Nakeen	Airport	Public	Atlantic & Pacific Tea Co	DIRT, 04/22, 800' x 40' GRVL-G, 08/26, 1950' x 50' GRVL-G, 14/32, 1850' x 45'			Unattended
Naknek	Airport	Public	Alaska DOT&PF	WATER, 08W/26W, 2000' x 300'	24 HRS	fuel, major airframe, minor powerplant repair	Unattended
Tibbetts (Naknek)	Airport	Private	Peninsula	GRVL-DIRT, 16/34, 1700' x 60' WATER, 05W/23W, 2000' x 200' WATER, 13W/31W, 10000' x 2000'		minor airframe & powerplant repair	All/All/Daylight
Napakiak	Airport	Public	Alaska DOT&PF	GRAVEL-F, 16/34, 2150' x 50' GRVL-G, 01/19, 3000' x 60'		none	Unattended
Napaskiak	Airport	Public	Alaska DOT&PF	WATER, 09W/27W, 15000' x 2000'	DUSK-DAWN	none	Unattended
Stuyahok	Airport	Public	Alaska DOT&PF	GRVL-G, 15/33, 1800' x 50'	DUSK-DAWN	none	Unattended
Newtok	Airport	Public	Alaska DOT&PF	GRVL-F, 15/33, 2180' x 35'		none	Unattended
Newtok	Seaplane Base	Public	Public Domain	WATER, E/W, 5000' x 400'		none	Unattended
Nightmute	Airport	Public	Alaska DOT&PF	GRVL-F, 02/20, 1600' x 45'		none	Unattended
Nunapitchuk	Airport	Public	Alaska DOT&PF	GRVL-G, 18/36, 2040' x 60' WATER, NE/SW, 3000' x 300'		none	Unattended
Nyac	Airport	Private	Tuluksak Dredging Co	GRAVEL, 05/23, 3650' x 100'		none	Unattended
Ophir	Airport	Public	Alaska DOT&PF	TURF-GRVL, 11/29, 1500' x 40'		none	Unattended
Pilot Station	Airport	Public	Alaska DOT&PF	GRVL-G, 07/25, 2520' x 55' GRVL-F, 09/27, 2050' x 40'	DUSK-DAWN	none	Unattended
Platinum	Airport	Public	Alaska DOT&PF	GRVL-F, 13/31, 3640' x 60'		none	Unattended
Platinum Mine	Airport	Private	R.A. Hanson Co.	GRAVEL, 16/34, 2000' x 75'		none	Unattended
Portage Creek	Airport	Public	Alaska DOT&PF	GRVL-F, 01/19, 1470' x 60' GRVL-F, 09/27, 1920' x 60'		none	Unattended
The Queens	Airport	Private	Queens Fisheries	DIRT, 04/22, 1380' x 100'		fuel	Unattended
Quinhagak	Airport	Public	Alaska DOT&PF	GRAVEL-G, 04/22, 2600' x 60' WATER, ALL/WAY, 5000' x 500'	RDO-CTL	none	Unattended
Red Devil	Airport	Public	Alaska DOT&PF	GRVL-G, 09/27, 4750' x 74'		none	Unattended

Table B-1. Capstone Area Airports

Name	Type	Use	Owner	Runways	Lighting	Services	Attendance Schedule
Russian Mission	Airport	Public	Alaska DOT&PF	GRAVEL-F, 17/35, 2700' x 50' WATER, 18W/36W, 3000' x 500' WATER, 04W/22W, 10000' x 500'	RDO-CTL	none	Unattended
Scammon Bay	Airport	Public	Alaska DOT&PF	GRVL-G, 10/28, 3000' x 75' GRVL-P, 16/34, 2300' x 35'	RDO-CTL	none	Unattended
Shageluk	Airport	Public	Alaska DOT&PF	WATER, 18W/36W, 5000' x 1000' GRAVEL-G, 02/20, 2060' x 50' WATER, 09W/27W, 15000' x 2000'	DUSK-DAWN	none	Unattended
Sheldon Point	Airport	Public	Alaska DOT&PF	WATER, 18W/36W, 15000' x 2000'		none	Unattended
Sleetmute	Airport	Public	Alaska DOT&PF	GRAVEL-F, 14/32, 3100' x 60'	DUSK-DAWN	none	Unattended
Diamond NN Cannery	Airport	Private	Diamond NN Cannery	DIRT, 03/21, 800' x 30' DIRT, 17/35, 1400' x 90'		none	Unattended
PAF Cannery	Airport	Public	PAF CANNERY	DIRT, 17/35, 750' x 30' DIRT, E/W, 650' x 75' GRVL-G, 04/22, 2260' x 60'		none	Unattended
South Naknek Nr 2	Airport	Public	Alaska DOT&PF	GRAVEL-G, 12/30, 2200' x 50'	24 HRS	none	Unattended
Sparrevohn LRRS	Airport	Private	U.S. Air Force	GRAVEL-G, 16/34, 4100' x 150' GRAVEL-G, 06/24, 1900' x 60'		none	All/All/All
St Mary's	Airport	Public	Alaska DOT&PF	GRAVEL-G, 16/34, 6003' x 150'	DUSK-DAWN	none	Winter/All/0700-1530, Summer/Mon-Fri/0700-1530
St Michael	Airport	Public	Alaska DOT&PF	GRAVEL-G, 02/20, 4000' x 75'	DUSK-DAWN	none	Unattended
Stebbins	Airport	Public	Alaska DOT&PF	GRVL-G, 05/23, 3000' x 60'	DUSK-DAWN	none	Unattended
Stony River 2	Airport	Public	Alaska DOT&PF	GRVL-DIRT, 18/36, 2555' x 50'		none	Unattended
Takotna	Airport	Public	Alaska DOT&PF	GRAVEL, 06/24, 1717' x 65'		none	Unattended
Tatalina LRRS	Airport	Private	U.S. Air Force	GRVL, 16/34, 3800' x 150'	RDO REQ	none	All/All/All
Taylor Mountain	Airport	Private	Alaska DNR	GRVL-DIRT-P, 14/32, 1950' x 12'		none	Unattended
Tikchik Lodge	Seaplane Base	Private	Public Domain	WATER, NE/SW, 2000' x 2000'		none	Unattended
Togiak	Airport	Public	Alaska DOT&PF	GRVL-G, 02/20, 4220' x 125' GRVL-G, 09/27, 1090' x 60'	DUSK-DAWN	none	Unattended
Toksook Bay	Airport	Public	Alaska DOT&PF	GRVL-F, 15/33, 1800' x 55'		none	Unattended
Tuluksak	Airport	Public	Alaska DOT&PF	GRVL-DIRT-F, 02/20, 2500' x 30'		none	Unattended
Tuntutuliak	Seaplane Base	Public	Public Domain	WATER, NE/SW, 2000' x 200' WATER, NW/SE, 2000' x 200'		none	Unattended
Tuntutuliak	Airport	Public	Alaska DOT&PF	GRVL-F, 02/20, 1800' x 28'	DUSK-DAWN	none	Unattended
Tununak	Airport	Public	Alaska DOT&PF	GRVL-F, 08/26, 2010' x 40'	DUSK-DAWN	none	Unattended
Twin Hills	Airport	Public	Alaska DOT&PF	GRAVEL-F, 01/19, 3000' x 60' GRAVEL-G, 08/26, 2000' x 80'	DUSK-DAWN	none	Unattended
Unalakleet	Airport	Public	Alaska DOT&PF	GRAVEL-G, 14/32, 6004' x 150'	DUSK-DAWN	fuel	All/Mon-Fri/0800-1600
Yankee Creek 2	Airport	Public	Toivo Rosander	GRVL-DIRT, 13/31, 2000' x 80'		none	Unattended

Appendix C. Baseline Survey Instrument

Not for use by respondent

Study Number ☐☐☐

Employer Code ☐☐

Employer_____

Dear Pilot,

Purpose

The Alaskan Region's "Capstone Program" is an accelerated effort to improve aviation safety and efficiency through installation of Global Positioning System (GPS)-based avionics and data link communications equipment in most commercial aircraft serving the Yukon-Kuskokwim delta area (YK Delta). The University of Alaska Anchorage is working with the FAA to provide pilot training and to evaluate the safety effects of the Capstone program. This survey collects baseline data for the safety study. In the future, we will also be asking you for information on flights you make in Capstone-equipped aircraft, and we'll be doing more surveys over the three-year study period.

Confidentiality

All the information you provide is confidential. Your name is listed only on this cover sheet and is not included in the data files; we identify both pilots and employers only by the study numbers we assign.

This information collection conforms to legal and administrative standards established by the Federal Government to assure confidential treatment of statistical information. The information you provide will be used only for statistical purposes and will not be published or released in any form that would reveal specific information reported by an individually identifiable respondent. This questionnaire has been approved by the Office of Management and Budget and has been given an OMB Approval Number of 2120-0587.

The data that you, the pilots, provide is critical to the safety study. Without complete and accurate data, we will be unable to control for such important factors as pilot training and experience, and we won't know whether observed changes in accident rates are the results of Capstone equipment or other factors.
Thank you for your participation in this study.

Sincerely,

Alexandra Hill
Research Associate
Institute of Social and Economic Research
(907) 786-7740

Section A. Pilot

A1. Please tell us what different FAA ratings and certificates you have.

A1a. Commercial ○ Yes ○ No

A1b. Instrument ○ Yes ○ No

A1c. ATP ○ Yes ○ No

A1d. CFI ○ Yes ○ No

A1e. CFII ○ Yes ○ No

A1f. Navigator ○ Yes ○ No

A1g. A & P ○ Yes ○ No

A1h. AI ○ Yes ○ No

Other (please specify)

A1i. _____

A1j. _____

A2. We would like to know how many hours you've flown in different types of aircraft, in the YK Delta and elsewhere. Also, please tell us what aircraft-type ratings you've earned, and hours in those aircraft. If you're not sure of the exact hours, just give us your best estimate.

Type of FAA Rating/ Certificate	Have Rating?	Total Hours	PIC Hours	YK Delta Hours
A2a. Total Hours				
A2b. Single Engine Land	☐ Yes ☐ No			
A2c. Single Engine Sea	☐ Yes ☐ No			
A2d. Multi Engine Land	☐ Yes ☐ No			
A2e. Multi Engine Sea	☐ Yes ☐ No			
A2f. Rotorcraft	☐ Yes ☐ No			
A2g. Turbine	☐ Yes ☐ No			

A/C Type Ratings		Total Hours	PIC Hours	YK Delta Hours
A2h.				
A2i.				
A2j.				
A2k				

A3. If you have ever worked as a flight follower or a dispatcher, tell us how long you did that work in total, and in the YK Delta. Otherwise, skip to question A4.

		Total		YK Delta	
A3a. Flight Follower	☐ Yes ☐ No	Yrs _____	Mos. _____	Yrs _____	Mos. _____
A3b. Dispatcher	☐ Yes ☐ No	Yrs _____	Mos. _____	Yrs _____	Mos. _____

A4. Please estimate how many hours you've flown (total, PIC, and in the YK Delta), VFR and IFR (that is, with an IFR flight plan), and day and night.

	Total Hours	PIC Hours	YK Delta Hours
A4a. VFR	_____	_____	_____
A4b. IFR	_____	_____	_____
A4c. Day	_____	_____	_____
A4d. Night	_____	_____	_____

A5. Please estimate your IFR activity over the last year.

A5a. Number of IFR Departures (IFR Flight Plan) _____

A5b. Number of instrument approaches (IMC conditions) _____

A6. How old are you? Years ☐☐

A7. Are you male or female? ○ Male ○ Female

A8. Please check the highest level of formal education you have completed.

☐ Attended high school, didn't graduate
☐ GED
☐ High school diploma
☐ Attended college, no degree
☐ Associate's degree
☐ Bachelor's degree
☐ Master's degree
☐ Doctoral degree
☐ No Answer

Section B. Training

B1. When did you start working for your current employer?

Mo. _____ Yr. _____

B2. What company training have you received in the last 14 months?

Type of Training		Hours Ground Training	Hours Flight Training
B2a. Initial	☐ Yes ☐ No	_____	_____
B2b. Recruitment	☐ Yes ☐ No	_____	_____
B2c. Upgrade	☐ Yes ☐ No	_____	_____
B2d. Transition	☐ Yes ☐ No	_____	_____
B2e. Requalification	☐ Yes ☐ No	_____	_____
B2f. Flight	☐ Yes ☐ No	_____	_____

B3. What other training have you received in the last 14 months?

Type of Training (specify)	Hours Ground Training	Hours Flight Training
B3a. _____	_____	_____
B3b. _____	_____	_____
B3c. _____	_____	_____

B4. Have you ever used GPS navigation equipment in an aircraft?

☐ Never ☐ A few times ☐ Extensively

B5. How did you learn to use GPS navigation equipment? (check all that apply)

☐ Don't know how ☐ Self taught ☐ Formal training

B6. How much initial training do you think you will need on the Capstone equipment to be able to use it effectively?

Type of Training	None	Under 1 hour	1 to 5 hours	5 to 20 hours	More than 20 hours	Don't know
B6a. Ground	○	○	○	○	○	○
B6b. Simulator	○	○	○	○	○	○
B6c. Flight	○	○	○	○	○	○

B7. What types of training, beyond that which you already receive, do you feel would help you fly safely in the YK Delta?

Section C. Opinions about Safety and Capstone

C1. What are your safety concerns regarding commercial flying in the YK Delta?

	Not a Concern		A Minor Concern		A Major Concern	Don't Know
	1	2	3	4	5	8
C1a. Encountering ceilings below 1000 feet or visibility less than 3 miles that available weather reports didn't warn you about	○	○	○	○	○	○
C1b. Flying from VMC into IMC	○	○	○	○	○	○
Pressure to fly in ceilings under 1000 ft or visibility less than 3 miles:						
C1c. …from company	○	○	○	○	○	○
C1d. …from passengers	○	○	○	○	○	○
C1e. …from other pilots	○	○	○	○	○	○

	Not a Concern		A Minor Concern		A Major Concern	Don't Know
	1	2	3	4	5	8
C1f. Flying without required equipment/ ratings (e.g., accepting special VFR clearances w/o instrument equipped a/c or not instrument current)	○	○	○	○	○	○
C1g. Flying with inoperative or unreliable navigation or radio equipment in aircraft	○	○	○	○	○	○
C1h. Not enough navigation aids such as VORs and NDBs	○	○	○	○	○	○
C1i. Existing navigation aids don't always work	○	○	○	○	○	○
C1j. Pilots not experienced in Alaska conditions	○	○	○	○	○	○
C1k. Air traffic congestion near airports	○	○	○	○	○	○
C1l. Aircraft conflicts on the ground (eg when taxiing)	○	○	○	○	○	○
C1m. Mistakes by controllers	○	○	○	○	○	○
C1n. Poor communications between pilots and controllers	○	○	○	○	○	○
C1o. Too few controllers	○	○	○	○	○	○
C1p. Pilots not following controller instructions	○	○	○	○	○	○

Other (please specify)

C1q.

	○	○	○	○	○	○

_____

C1r

	○	○	○	○	○	○

_____

C2. What benefits do you expect from the Capstone program in the Bethel area?

	Not a Benefit		A Minor Benefit		A Major Benefit	Don't Know/No Opinion
	1	2	3	4	5	8
C2a. Fewer cancelled flights due to new instrument approaches at remote airports	○	○	○	○	○	○
C2b. Safer operations at remote airports due to new instrument approaches	○	○	○	○	○	○
C2c. Safer flying in minimum legal VFR conditions	○	○	○	○	○	○
C2d. Fewer near mid-air collisions	○	○	○	○	○	○
C2e. More useful weather information	○	○	○	○	○	○
C2f. Better awareness of other aircraft and ground vehicles when taxiing	○	○	○	○	○	○
C2g. Improved SVFR procedures due to better pilot and controller awareness of aircraft locations	○	○	○	○	○	○
C2h. Easier in flight diversions or re-routes	○	○	○	○	○	○
C2i. Time savings from more direct flight routes	○	○	○	○	○	○
C2j. Improved terrain awareness for pilots	○	○	○	○	○	○
C2k. Improved search and rescue capabilities	○	○	○	○	○	○
Other (please specify)						
C2l. _____	○	○	○	○	○	○
C2m. _____	○	○	○	○	○	○

C3. What are the potential problems with the Capstone program in the Bethel area?

	Not a Problem		A Minor Problem		A Major Problem	Don't Know/No Opinion
	1	2	3	4	5	8
C3a. Less heads-up time	○	○	○	○	○	○
C3b. Heavier workload in the cockpit	○	○	○	○	○	○
C3c. Greater number of aircraft using GPS point-to-point routing creates increased potential for near mid-air collisions	○	○	○	○	○	○
Other (please specify)						
C3d. _____	○	○	○	○	○	○
C3e. _____	○	○	○	○	○	○

C4. How do you feel about the Capstone equipment that you'll be using?

Strongly Dislike		Neither Like nor Dislike		Strongly Like	No Opinion
1	2	3	4	5	8
○	○	○	○	○	○

C5. Will you use the Capstone equipment?

Never		Sometimes		Always	Don't Know
1	2	3	4	5	8
○	○	○	○	○	○

C6. To what extent do you expect Capstone equipment to affect your go/no go decisions under the following conditions:

	Not at All 1	2	A Small Amount 3	4	A Great Deal 5	Don't Know/No Opinion 8
C6a. Low Ceilings	○	○	○	○	○	○
C6b. Low Visibility	○	○	○	○	○	○
C6c. High Winds	○	○	○	○	○	○
C6d. Icing Potential	○	○	○	○	○	○

C7. For what reasons might pilots choose not to use Capstone equipment?

C7a. Too distracting	○ Yes	○ No	○ Don't know/No opinion
C7b. Too difficult to use	○ Yes	○ No	○ Don't know/No opinion
C7c. Don't want company watching aircraft location at all times	○ Yes	○ No	○ Don't know/No opinion
C7d. Don't trust equipment to provide reliable information	○ Yes	○ No	○ Don't know/No opinion
C7e. Concerned that equipment might break	○ Yes	○ No	○ Don't know/No opinion
Other (please specify) C7f. _____	○ Yes	○ No	○ Don't know/No opinion
C7g _____	○ Yes	○ No	○ Don't know/No opinion

C8. Do you think the Capstone program will make flying in the YK Delta safer?

Not at All 1	2	A Small Amount 3	4	A Great Deal 5	Don't Know/No Opinion 8
○	○	○	○	○	○

C9. If it does address your safety concerns, which ones, and how?

Section D. Pilot Experiences

D1. How many times during the past year have inaccurate weather forecasts caused you to encounter instrument meteorological conditions when you didn't expect to?

○ Never ○ Once a month or more ○ Don't know
○ A few times ○ Once a week or more

D2. How many times during the past year have deteriorating ceilings or visibility made you unsure of your own position relative to the surrounding terrain?

○ Never ○ Once a month or more ○ Don't know
○ A few times ○ Once a week or more

D3. During the past year, how many times have you unexpectedly seen other aircraft close enough to you that you felt it created a collision hazard?

○ Never ○ Once a month or more ○ Don't know
○ A few times ○ Once a week or more

D4. During the past year, how many times have you been cleared into SVFR when the separation between aircraft in the pattern made you uncomfortable?

○ Never ○ Once a month or more ○ Don't know
○ A few times ○ Once a week or more

D5. During the past year, how many times might your go/no go or routing decisions have been improved if you had access to real time weather or Special Use Airspace status?

○ Never ○ Once a month or more ○ Don't know
○ A few times ○ Once a week or more

The questions below have been asked to pilots in many different places. Your answers will help us understand how Alaska pilots are different from, and the same as, pilots in other places. "How many times . . ." means how many times in your entire flying career.

D6. How many times have you run so low on fuel (NOT because of equipment failures) that you were seriously concerned about making it to an airport before you ran out?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D7. How many times have you made a precautionary or forced landing at an airport other than your original destination?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D8. How many times have you made a precautionary or forced landing away from an airfield?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D9. How manv times have vou inadvertentlv stalled an aircraft?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D10. How many times have you become so disoriented that you had to land or call ATC for assistance in determining your location?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D11. How many times have you had a mechanical failure which jeopardized the safety of your flight? (For example, any failure while on a cross-country; landing gear stuck in up position; engine running rough or quitting.)

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D12. How many times have you had an engine quit because of fuel starvation, either because you ran out of fuel or because of an improper pump or fuel tank selection?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D13. How many times have you flown into areas of instrument meteorological condition, without an instrument rating or an instrument qualified aircraft?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D14. How many FAA-sponsored Safety Seminars have you attended during the last 12 months?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D15. How many hours of in-flight training have you received from a certificated instructor during the last 12 months?

○ Never ○ One ○ Two ○ Three ○ Four ○ Five ○ Six or more

D16. Please add any other comments you would like us to know about Capstone, about safety, or about flying in the YK Delta.