NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

May 18, 2016

Group Chairman's Factual Report

OPERATIONAL FACTORS

ANC15FA049

A. ACCIDENT

Operator:	SeaPort Airlines, Inc., dba Wings of Alaska
Location:	Juneau, Alaska
Date:	July 17, 2015
Time:	1318 Alaska daylight time[1]
Airplane:	Cessna 207A, Registration Number: N62AK, Serial #: 20700780

B. OPERATIONS GROUP

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C. SUMMARY

On July 17, 2015, about 1318 Alaska daylight time, a Cessna 207A airplane, N62AK, sustained substantial damage following an in-flight collision with tree-covered terrain about 18 miles west of Juneau, Alaska. The flight was being operated as Flight 202, by Sea Port Airlines, Inc., dba Wings of Alaska, as a visual flight rules (VFR) scheduled commuter flight under the provisions of 14 Code of Federal Regulations (CFR) Part 135. The commercial pilot sustained fatal injuries, and four passengers sustained serious injuries. Visual meteorological conditions were reported at the Juneau International Airport (JNU), Juneau, Alaska, at the time of departure. Flight 202 departed the Juneau Airport about 1308, for a scheduled 20 minute flight to Hoonah Airport (HNH), Hoonah, Alaska. A company flight plan was on file and company flight following procedures were in effect.

According to Juneau Air Traffic Control Tower (ATCT) personnel, the pilot requested and received taxi clearance to depart for the 20 minute VFR flight to Hoonah at 1306. The flight was cleared for takeoff about 2 minutes later by the ATCT specialist on duty with no reported problems. About 15 minutes later, Juneau Police dispatchers received a 911 cell phone call from a passenger on board that the airplane had crashed.

[1] All times are Alaska daylight time (AKD) based on a 24-hour clock, unless otherwise noted. Actual time of accident is approximate.

About 1336, the United States Coast Guard (USCG) Alaska received a 406 Mhz emergency locator transmitter (ELT) signal assigned to the accident airplane. At 1421, after being notified of an overdue airplane, and after learning about reports of an ELT signal along the accident pilot's anticipated flight route, search and rescue personnel from the USCG Air Station Sitka, began a search for the missing airplane. About 1650, the crew of a USCG HH-60 helicopter located the airplane's wreckage in an area of mountainous, tree-covered terrain. A rescue swimmer was lowered to the accident site and discovered that the pilot had died at the scene, and the four passengers had survived the crash. The four survivors were hoisted aboard the HH-60 helicopter in two trips and then transported to Juneau.

D. DETAILS OF THE INVESTIGATION

In addition to interviews conducted immediately following the accident with the company president, executive vice-president, and base chief pilot by the NTSB investigator-in-charge, the following telephonic interviews were conducted prior to the NTSB Operations Group traveling to SeaPort Airlines' headquarters:

- August 6, 2015, an interview was conducted with the dispatcher on duty at the time of the accident.
- August 10, 2015, an interview was conducted with one of the accident pilot's roommates.
- August 11, 2015, an interview was conducted with the other roommate of the accident pilot.
- August 12, 2015, the pilot's next of kin was interviewed, as was the company dispatcher on duty when the pilot began her duty day.

The NTSB Operations Group members convened in Portland, Oregon, on October 6, 2015, to conduct interviews with personnel from the Federal Aviation Administration (FAA) and SeaPort Airlines, Inc.

On October 7, 2015, an interview was conducted with the current FAA Principal Operations Inspector (POI) for oversight of SeaPort Airlines' Air Carrier Certificate, and the FAA's Frontline Manager (FLM) responsible for overseeing the POI of SeaPort Airlines.

On October 8, 2015, interviews were conducted with the operator's Director of Operations, Director of Systems Operation Control, and a Juneau qualified dispatcher.

On October 9, 2015, an interview was conducted with the operator's Chief Pilot.

The NTSB Operations Group concluded the interviews in Portland, Oregon, on October 9, 2015.

E. FACTUAL INFORMATION

1.0 History of Flight

On the day of the accident, the pilot arrived at the company office in Juneau about 1200. The accident flight was the pilot's first flight of the day. The flight departed the Juneau Airport with four adult passengers, destined for Hoonah.

The company had a flight risk assessment (FRA) program in place for operations conducted in Alaska, which required each flight be assigned a risk level on a scale of 0 to 46, with the intention of mitigating the hazards for high risk flights. (See section 6.4.1 for more information about risk assessment forms.)

No FRA was submitted by the pilot prior to departure on the accident flight. The company dispatcher on duty when the accident pilot began her duty day did discuss the weather with the pilot during the "duty-on" briefing. He told her that most flights to Hoonah had cancelled in the morning due to poor weather conditions and that she should talk with the pilot who had just returned. He did not review weather camera images with the accident pilot prior to the flight and had no further communication with the pilot.

The company dispatcher on duty at the time of the accident only communicated with the pilot when she reported taxiing off the ramp for departure. No weather information was discussed, and no further radio communications were received from the pilot by the company.

The airplane impacted a large spruce tree, at an elevation of about 1,250 feet mean sea level. After the initial impact, the airplane fuselage separated into two pieces. The forward section of the airplane, consisting of the cockpit and engine, separated just forward of the main landing gear assembly and came to rest inverted about 50 feet forward of the initial impact point. The remaining section consisting of the main cabin, wings, and empennage came to rest inverted just below the initial impact point.

The closest official weather observation station is Juneau, which is located about 18 miles east of the accident site. On July 17, at 1253, an Aviation Routine Weather Report (METAR) was reporting in part: Wind, 110 degrees at 14 knots; visibility, 7 statute miles in light rain and mist; clouds and ceiling, 200 feet few, 3,500 feet overcast; temperature, 57 degrees F; dew point, 55 degrees F; altimeter, 30.24 inHg.

See the Meteorology Group Chairman's report for additional weather information.

2.0 Flight Crew Information

2.1 The Pilot

The pilot, age 45, held a commercial pilot certificate with an airplane single engine land and sea, multi-engine land, and instrument ratings. A first-class airman medical certificate was dated April 9, 2015, and contained limitations of "must wear corrective lenses."

A review of SeaPort Airlines' personnel records[2] indicated that the pilot completed her initial company training, which included pilot ground and flight training, and was assigned to fly Cessna 207A airplanes on June 23, 2015.

2.1.1 The Pilot's Flight Times

The pilot's flight times, based on SeaPort Airlines' personnel records dated May 13, 2015, and the addition of company flying through July 16, 2015, were as follows:

Total pilot flying time	840 hours
Total last 12 months	436 hours
Total last 3 months	158 hours
Total night cross country	30 hours
Total cross country	210 hours
Total Alaska time	47 hours
Instrument	96 hours
Actual	8 hours
Simulated	88 hours

2.1.2 Pilot Flight and Duty Times

Flight and duty records[3] did not disclose an assigned duty period and was therefore limited to 8 hours of flight time during any 24 consecutive-hour period.[4]

In the month of June 2015, the pilot was on duty for 27 days and flew about 23 hours, with 3 days off. In July 2015, the pilot was on duty for 11 days, including the day of the accident, and flew about 41 hours, with 6 days off.

2.1.3 Pilot 72-Hour History

The pilot did not have a day off in the 72 hours preceding the accident flight. During that time, she flew a total of 19 segments, totaling 9.4 hours, not including the accident flight. The flight and duty records contained the following information with regards to the preceding 72 hours:

July 14, 2015 Duty On – 1200 Duty Off – 2118 Total Duty – 9:18				
Daily Trip Number	Flight Route	Estimated Departure	Estimated Arrival	Flight Time
1	JNU – HOONAH – JNU	1315	1415	:43
2	JNU – HOONAH – JNU	1430	1545	:51
3	JNU – SKAGWAY – JNU	1645	1830	1:23

[2] See attachment 2: Company Personnel Records
[3] See attachment 3: Flight and Duty Records
[4] See 14 CFR 135.267(b): Flight time limitations and rest requirements: Unscheduled 1- and 2-pilot crews

July 15, 2015 Duty On – 1200 Duty Off – 2110 Total Duty – 9:10				
Daily Trip Number	Flight Route	Estimated Departure	Estimated Arrival	Flight Time
1	JNU – GUSTAVUS – JNU	1345	1500	:56
2	JNU – GUSTAVUS – JNU	1550	1710	:52
3	JNU – HOONAH – JNU	1830	2015	1:02

July 16, 2015 Duty On – 1130 Duty Off – 2130 Total Duty – 10:00				
Daily Trip Number	Flight Route	Estimated Departure	Estimated Arrival	Flight Time
1	JNU – SKAGWAY – HAINES – JNU	1220	1430	1:36
2	JNU – SKAGWAY – JNU	1630	1815	1:26
3	JNU – SKAGWAY – JNU	1900	1945	:38

On July 17, 2015, the day of the accident, the pilot's duty day started at 1200. The accident flight was her first flight of the day.

In an interview, Shane Mitchell, roommate of the accident pilot, stated that he had eaten dinner and watched movies with the accident pilot the night prior to the accident. He was unaware of what time she went to bed the night before the accident, but stated that he was up before her on the day of the accident, around 0800 AKD.

When asked about any recent illnesses, another roommate, James Caldwell, stated that the pilot told him she "felt like she was maybe coming down with something," and that she was not "feeling great."

2.1.4 Pilot Medical and Pathological Information

A postmortem examination of the pilot was conducted under the authority of the State of Alaska Medical Examiner, Anchorage, Alaska on July 20, 2015. The cause of death for the pilot was attributed to multiple blunt force injuries.

2.1.5 Pilot's Post-Accident Toxicological Testing

The FAA's Civil Aeromedical Institute performed toxicological examinations for the pilot on September 9, 2015, which were negative for carbon monoxide and ethanol. The toxicological examination revealed Valsartan in the pilot's urine and blood.

Valsartan is a prescription anti-hypertensive medication used in the treatment of high blood pressure. The use of this medication was reported by the pilot on her last application for an airman medical certificate.

3.0 The Airplane

The accident airplane, N62AK, was a 1984 model Cessna 207A airplane. Prior to the accident flight, the airplane had logged a total time in service of 26,613.1 flight hours. The airplane was maintained under a 100 hour/annual inspection program, and the most recent 100 hour inspection of the airframe and engine was on July 6, 2015.

The airplane was equipped with a Continental Motors IO-520-F reciprocating engine that was rated at 285 horsepower. The engine was overhauled on June 12, 2015, installed on the airplane July 14, 2015, and accumulated about 8.2 hours of operation prior to the accident flight.

In an interview, a company pilot and roommate of the accident pilot stated that he flew the accident airplane the day before the accident. He said there were no issues or deferred maintenance items, adding that the airplane was "great."

3.1.1 Passenger Information and Seating Positions

The right front crew seat (Seat #2) remained unoccupied.

Passenger #1	210 lbs	Seat #3
Passenger #2	150 lbs	Seat #4
Passenger #3	140 lbs	Seat #5
Passenger #4	140 lbs	Seat #6

3.1.2 Weight and Balance

No record of a completed weight and balance calculation was located with the aircraft wreckage, as required by the SeaPort Airlines' General Operations Manual Section B *Weight and Balance Procedures*.[5]

Passenger bags and cargo were weighed by the NTSB IIC after the wreckage was recovered to Juneau.

Basic Operating Weight	2285.0 lbs	
Pilot	160.0 lbs	
Fuel (FOB)	240.0 lbs	(Estimate based on company guidelines)
Baggage/Cargo	185.2 lbs	
Mail	111.2 lbs	
Comat	13.6 lbs	
Survival gear	13.6 lbs	

Mail and baggage weighing a total of 78 lbs was located in the forward baggage compartment, with the remainder located in the rear baggage area.

The estimated gross weight of the airplane at takeoff was 3,726.6 pounds, or approximately 73.4 pounds below the maximum takeoff gross weight of 3,800 pounds.

Title 14 CFR 135.63(c) requires only operators of multi-engine airplanes prepare and retain load manifests.

[5] See attachment 4: SeaPort Airlines Inc. GOM Section B.1(9), and attachment 5: SeaPort Airlines Inc. Flight Report.

4.0 Aerodrome Information

4.1 Juneau Airport

The Juneau Airport (JNU) is a public airport in Class D airspace, located 7 miles northwest of Juneau, Alaska, at an estimated elevation of 25 feet. The airport had one open runway (08/26) at the time of the accident. Runway 08/26 is 8857 feet long and 150 feet wide and has two published instrument approach procedures.

5.0 Company Overview

SeaPort Airlines is a 14 CFR Part 135 air carrier that holds on-demand and commuter operations specifications. The air carrier is authorized to conduct business exclusively under the business names "SeaPort Airlines, Inc." or "Wings of Alaska." The company headquarters is located at the Portland International Airport, Portland, Oregon. The president, chief pilot, director of maintenance, and director of systems operation control all resided in Portland. The director of operations (DO) resided in Memphis, Tennessee.

At the time of the accident, SeaPort Airlines was operating 21 airplanes, of which 5 were based in Juneau. The company employed about 80 pilots, with bases in Juneau, Alaska; Portland, Oregon; Memphis, Tennessee; and San Diego, California.

5.1 Operations Management

The SeaPort Airlines, Inc. General Operations Manual (GOM), section A, described the company's organization, including its organizational chart,[6] and the duties and responsibilities of managers. Pilots were supervised by the assistant chief pilots, who reported to the chief pilot, who in turn reported to the DO, who reported to the company president. Dispatchers were supervised by the director of systems operation control (SOC), who reported to the director of operations. The GOM identified the 14 CFR Part 119 required management personnel, and the Operations Specifications paragraph A008, dated January 24, 2011, referenced the GOM and Operations Specifications paragraph A006 for individuals authorized to exercise operational control.

5.1.1 Director of Operations

The GOM section A.4.2 stated that the DO was responsible for overall flight control and for planning, organizing, directing, controlling and staffing all company flight operations and related operational activities. In addition to the other duties, he supervised personnel involved with flight control and functions of flight control with emphasis on mission objectives. He established and maintained appropriate procedures to ensure compliance with federal regulations and developed procedures for training of flight department employees.

In an interview, the DO stated that management supervised dispatchers with operational control by receiving daily briefings and then quizzing them throughout the day on routing, pilot qualifications, and aircraft maintenance status. He stated that, since the dispatcher had operational control, they could make operational changes, such as changing the type of airplane used, without his input. Only if the change had an impact on the overall operation would he be notified.

[6] See attachment 6: SeaPort Airlines Inc. Organizational Chart

5.1.2 Assistant Director of Operations at Assigned Bases

The GOM section A.4.2.1 stated that the assistant director of operations (ADO) would exercise operational control and supervised the director of flight control at their base of operations. The GOM stated that SeaPort Airlines reserved the right to leave the position vacant at base locations served by a higher management position. The Juneau, Alaska, base did not have an ADO and did not have anyone higher than this position at the time of the accident.

This position was omitted from Flight Operations Bulletin 4-15,[7] which listed all operational control personnel.

5.1.3 Chief Pilot

The GOM section A4.4 stated that the chief pilot supervised flight crewmembers and was responsible for flight related activities. Additionally, the chief pilot was responsible for providing timely information to each crewmember pertaining to routes, NOTAMS, airports and company policy.

In an interview, the chief pilot stated that he was neither current nor qualified in the Cessna 206 or Cessna 207, both airplanes operating in Juneau. He further stated that it had been 10 months between his visit to the Juneau base in July and his previous visit.

5.1.4 Director of Systems Operation Control

The GOM section A.4.12 stated that the director of SOC was responsible for oversight of all operations in the SOC. In addition to the oversight, he established and maintained appropriate training, procedures, and routines to ensure efficient conduct with applicable federal regulation, Operations Specifications, manuals, company policy, and directives.

5.1.5 Dispatcher

The term "dispatcher," as used by SeaPort Airlines and throughout this document, is a company title and is not intended to imply that the person is an FAA-certified dispatcher. The GOM section 4.10 stated that operations personnel were also known as dispatchers, and, prior to service, they must have received training and must have been knowledgeable of the GOM, Operations Specifications, minimum equipment lists, and operational control policies and procedures of SeaPort Airlines. Additionally, the GOM stated one of the duties and responsibilities of the dispatcher was to assist pilots in flight preparation by gathering and disseminating pertinent information for all stations regarding weather or runway conditions and any information deemed necessary for the safety of flight.

Flight operations bulletin 4-15 lists eight dispatchers that were delegated operational control of SeaPort Airlines, Inc.

6.0 Company Operational Control Procedures

6.1 Operations Specifications Paragraph A008, Operational Control

A 14 CFR Part 135 operator must have a system and/or procedures for the control of flight movements. The intent of operations specification paragraph A008 is to promote a mutual

[7] See attachment 7: Flight Operations Bulletin 4-15

understanding between an operator and the FAA concerning the system and/or procedures used by that operator.

Operations Specifications Paragraph A008 (Operational Control)[8] was issued to SeaPort Airlines by the FAA on January 21, 2011, and stated in part:

> *(1) Reference AJAA GOM Section A and L*

SeaPort Airlines GOM section A, as referenced above, contains policies for Operational Control, but does not explain the procedures utilized for the initiation or conduct of flight movements.[9] The policies contained in this section are a restatement of the certificate holder responsibilities listed on Operations Specifications Paragraph A008.

SeaPort Airlines GOM section L, as referenced above, contains the procedures for conducting flight locating, but does not contain procedures for the initiation or conduct of flight movements.[10]

Section U.1 of the GOM, cold weather, states, in part:

The decision to takeoff, or land in marginal weather considering runway and airport conditions rests with the PIC. The rapid changes in ceilings, visibilities, freezing levels, and runway conditions typical of winter operations adds difficulty and uncertainty to the PIC's normal tasks.

6.2 FAA Guidance for Inspectors for Operational Control

6.2.1 FAA Order 8900.1 Two-Tiered Operational Control Concept

FAA Order 8900.1, Volume 3, Chapter 25, Section 5, 3-2029, H, states, in part:

> *The first tier is described as the assignment of flight crewmembers, and aircraft for revenue service under the operating certificate, and must be made by management or management delegates. In order to be delegated the authority to make these decisions, the management delegates must be trained, found competent, and designated by the certificate holder, be listed in the GOM, and be under management supervision. Management supervision means, that the certificate holder tracks the actions of the management delegate or employee, samples the work of that employee (reviews a sample of the decisions made), and has the ability to enforce the certificate holder's standards through corrective actions such as retraining, requalification, or disciplinary actions such as disqualification, demotion, suspension, or termination. Because the certificate holder is responsible for the conduct of its employees or agents, it must have the ability to monitor and control their performance.*
>
> *The second tier is more tactical and may be taken either by the certificate holder's direct employees or by the certificate holder's agents. This involves the decisions made by personnel (such as the PIC) in the day-to-day conduct of operations. This may include the initiation of flights upon the PIC receiving a request from the customer directly (often the*

[8] See attachment 8: Operations Specifications Paragraph A008
[9] See attachment 9: General Operations Manual Section A.1
[10] See attachment 10: General Operations Manual Section L

case in on-demand operations being conducted under a dedicated service contract, such as offshore operations or emergency medical service). This is acceptable if the PIC is authorized by the certificate holder to make those decisions on behalf of the certificate holder. To do so would require that the PIC be trained, found competent by the certificate holder, designated, be listed in the GOM (or in OpSpec A006, A039 or A040, if applicable), and be under management supervision. If maintaining a list of these personnel in the GOM is too cumbersome, a list of these personnel may be maintained at the air carrier's principal base of operations and referenced in the GOM. The method of maintaining and distributing this list to all affected parties must be described in A008 or in the GOM.

The GOM (or other appropriate documentation) must contain guidance which describes the certificate holder's operational control system. The training program must provide the certificate holder's personnel with the knowledge and skills required to ensure that the operational control system is effective.

In an interview, the POI stated there was an estimated 14 or 15 people authorized to exercise operational control on behalf of the operator. She said it was very widespread. When asked who in the organization was authorized to exercise Tier 1 operational control as defined in FAA Order 8900.1, she said a lot of the people in the SOC are listed.

6.2.2 FAA Order 8900.1 Summary of Operational Control

FAA Order 8900.1, Volume 3, Chapter 25, Section 5, 3-2029, K, states, in part:

Only approved persons may exercise operational control on the certificate holder's behalf.

The certificate holder must have adequate controls in place to ensure that officials in a position of authority over flights conducted under the certificate do so safely, and in compliance with the regulations, OpSpecs, GOM, as applicable, and accepted or approved procedures.

Management of operations should never be inattentive, distracted, or careless. Hands-off management is not a legitimate excuse for failing to maintain operational control.

6.2.3 FAA Order 8900.1 Operational Control Failures

FAA Order 8900.1, Volume 3, Chapter 25, Section 5, 3-2029, F, states, in part:

The level of severity of the failure in operational control will dictate the actions required by both the certificate holder and the FAA. Simple cases may require reinforcement or realignment of management structure or procedure. In such cases, administrative action may be acceptable. In more pronounced cases, civil penalty and/or certificate action may be appropriate.

The FAA has identified several failure modes of operational control, including at least the following basic conditions:

1) Loss of operational control within the air carrier—hands-off management results in inadequate controls over its own operations.

2) Loss of operational control within the air carrier—exercise of operational control by an unapproved person.

3) Loss or surrender of operational control externally; e.g., an air carrier's illegal renting/franchising-out the use of its air carrier certificate to one or more uncertificated entities.

The POI stated that, while conducting surveillance in the operations center for Seaport Airlines, she observed an airplane making 360-degree turns; she told the dispatcher that they should call the pilot and tell him to turn back. The dispatcher tried to call the flight back to JNU but was unable to make radio contact with the pilot. The plane descended to 800 feet over the channel and radio contact still could not be established. The POI called it a loss of operational control and a risk that needed to be mitigated. She thought a letter needed to be sent from the FAA to the company, but it was being held by the FAA Alaska Regional Deputy Division Manager. She stressed to the NTSB Operations Group Chairman that the findings needed to go to the company, but they were still going through the process.

6.3 Title 14 Code of Federal Regulations Part 119, Sec. 119.69

Title 14 CFR 119.69, Management personnel required for operations conducted under Part 135 states, in part:

That anyone in a position to exercise control over operations conducted under the operating certificate must be qualified through training, experience, and expertise, and to the extent of their responsibilities, have a full understanding of the following material with respect to the certificate holder's operation; aviation safety standards and safe operating practices; 14 CFR Chapter I (Federal Aviation Regulations); the certificate holder's operations specifications; all appropriate maintenance and airworthiness requirements of this chapter (e.g., parts 1, 21, 23, 25, 43, 45, 47, 65, 91, and 135 of this chapter); and the manual required by Sec. 135.21 of this chapter; and discharge their duties to meet applicable legal requirements and to maintain safe operations.

6.3.1 Dispatcher Training

In an interview, the dispatcher on duty at the time of the accident stated that there was no formal classroom training or syllabus for dispatcher training. He said his initial dispatcher training consisted of shadowing a dispatcher, followed by performing the duties himself and being watched by a qualified dispatcher. The training lasted about a month and consisted of the systems utilized, flight tracking, emergency operations, and weather products. He stated there was no recurrent training; they adjusted as things changed. When asked about training records, he stated that none existed.

The dispatcher that provided the accident pilot her "duty-on" briefing the day of the accident also stated that there was no formal classroom training for dispatchers and only on-the-job training, consisting of shadowing a dispatcher, followed by performing the duties while being observed.

The DO stated in an interview that there was no formalized training program for dispatchers but that it was a 4-6 week process, largely comprised of on-the-job training. He also stated there were no specific training documentation forms that he was aware of to keep track of training.

In an interview, the director of the SOC stated that the dispatchers in Portland were trained for Alaska-specific items, such as weather cameras, risk assessment forms, and unique weather patterns, but "at the end of the day, it's still Caravans or Cessnas flying up a canal." When asked about recurrent training for dispatchers, he stated that although they completed annual training, there was nothing documented at the time and nothing Juneau-specific.

The president of SeaPort Airlines stated in an interview that there was no training program for company dispatchers.

When asked in an interview how the requirements for persons exercising operational control (14 CFR 119.69) are met, the POI stated that they are trained but that she had never observed the training. As for prerequisites, she said there were none, as they did not need to be pilots or certified dispatchers.

The previous POI stated in an interview that 14 CFR 119 required operational control personnel to be knowledgeable in certain subjects. He said the dispatchers were trained, and it was documented that they had certain training, but there was no approved training program.

6.4 Dispatcher Training Forms

During an interview, the director of SOC stated that he maintained dispatcher training records for the Medallion safety program, and they were located in Portland. During a conversation with the director of safety in November 2015, the director of safety stated that, following the closure of the Juneau base, a box had arrived in Portland with dispatcher training records, and he would submit them to the NTSB.

On November 23, 2015, a copy of dispatcher training forms[11] was received by the Operations Group Chairman. The records contained training certificate forms for the dispatcher that spoke with the accident pilot during her "duty-on" briefing; the dispatcher on duty at the time of the accident; the dispatcher interviewed at SeaPort headquarters; and several other dispatchers.

A form attributed to the dispatcher who provided the accident pilot the "duty-on" briefing documented that he completed 10 hours of initial training on January 15, 2015. The date next to his signature on the certification line was April 6, 2015.

A form attributed to the dispatcher on duty at the time of the accident documented that he completed 5 hours of recurrent training on October 15, 2015. The date next to his signature on the certification line was April 6, 2015, the same date that was entered beside the signature of the director of SOC. October 15, 2015, was 6 days after the completion of company interviews by the Operations Group and more than 6 months after the date of his signature on the form.

[11] See attachment 11: Training Certificate Operations Personnel

A form attributed to the dispatcher interviewed at the operator's headquarters documented that he completed 10 hours of initial training on March 2, 2015. The date next to his signature on the certification line was April 6, 2015.

6.4.1 Flight Risk Assessment

SeaPort Airlines, implemented a flight risk assessment for the Alaska operations prior to appointing the DO to his position. The exact timing of the implementation could not be determined. The use of the risk assessment was not elaborated upon in the GOM, other than to assign responsibility to the pilot-in-command and director of flight control, an eliminated position according to flight operations bulletin 4-15.

Section A.4.7 of the GOM states:

The Pilot in Command (PIC) is directly and totally responsible for the operation of their assigned aircraft on any FAR Part 91 or 135 flights.

Specific duties of the PIC include:

- Becoming familiar with all available information concerning the flight including weather conditions at point of departure, en route, destination, and alternate if required.
- Conducting all flights in compliance with Federal Aviation Regulations, the aircraft flight manual, and company policies.
- Performs or supervises flight planning, flight preparation, and filing of a flight plan.
- Checking status of all previously noted maintenance discrepancies and ensuring airworthiness of the aircraft.
- Ensuring the aircraft is pre-flighted, thru-flighted, post-flighted, clean, and prepared for flight, for the comfort and safety of the passengers.
- Supervising the loading of passengers, baggage, cargo, fuel, and determining that weight and balance remains within the limitations contained in the aircraft flight manual.
- Final authority as to deciding when to start, delay, resume, cancel, divert, or abort their flight when operating conditions dictate.
- Completing flight and duty logs, aircraft time logs, and securing the aircraft at the completion of a flight.
- Completing Flight Risk Assessment, if applicable, prior to the flight to determine the risk level associated with the flight.
- Ensure the proper briefing of passengers.
- Accomplishing assignments of senior management.

The risk assessment applied values to certain situations/circumstances. According to the form,[12] risk values of 0-20 were considered a low risk factor and required only pilot and SOC concurrence. Risk values of 21-35 were classified as a risk factor of "caution," which required management notification. Risk values of 36-45 were classified as a risk factor of "medium," which required management approval, while values of 46 and higher were classified as "high–

[12] See attachment 12: Flight Risk Assessment

risk," which required mitigation or flight cancellation. There was also a section to be completed by the pilot that would list the proposed true airspeed and proposed altitude.

Three risk assessment forms[13] obtained by the Operational Factors Group during the visit to SeaPort Airlines, for a randomly selected day of June 9, 2015, revealed all three forms were incomplete, omitting the signoff of the dispatcher. Two of the three did not follow the guidance at the top of the page that stated the lowest total for any section could be zero and no negative values could be entered. Also, the same two forms required management notification, and there was no signoff signifying the notification took place.

In an interview, the dispatcher who was on duty at the time of the accident stated that a pilot-in-command would complete the risk assessment and fax it to the SOC. His job was to just make sure it "looked good." If management notification was required, he would sign that block but only inform management if their approval was required as determined by a risk value between 36 and 45.

The dispatcher who had provided the accident pilot the "duty-on" briefing stated in an interview that, after a pilot would complete the risk assessment, sometimes they would fax it to the SOC, and sometimes they would be maintained in Juneau. If he saw one on the fax machine in the SOC, he would glance over it to determine if he agreed with the values and would hold onto it for his own records, as he was not required to do anything specific with the forms. He further stated that he received no training on the use of the risk assessment.

On a randomly selected risk assessment form dated August 20, 2015, the form was incomplete, in addition to listing a proposed altitude of "1000 hopefully" for a flight requiring the crossing of a channel about 2.5 nautical miles wide at the narrowest point. Additionally, the pilot entered a negative value for the section labeled "destination factors" and omitted a 2-point value from the human factors section that every other pilot who completed a risk assessment that day applied to their score, the title of which was "ADO and ACP not on duty." The pilot assessed a total risk value of 17. When the omitted 2-point value is added and the negative "destination factors" value is removed, the total risk value is 21, which would have required management notification.

Another risk assessment by the same pilot as the previous form also contained assigned values inconsistent with the guidance provided at the top of the page. Also, for proposed true airspeed and proposed altitude, a question mark was entered.

The company president stated in an interview that the use of the risk assessment form was limited to Alaska only and was utilized as part of the Medallion program. It was not described in the GOM, but was intended to be utilized on a per-flight basis.

7.0 Minimum Enroute Altitudes

Title 14 CFR 135.183, Performance requirements: land aircraft operated over water states in part:

[13] See attachment 13: Completed Flight Risk Assessments

No person may operate a land aircraft carrying passengers over water unless it is operated at an altitude that allows it to reach land in the case of an engine failure, or it is necessary for takeoff or landing.

In an interview, the chief pilot stated that pilots were trained to meet the FAA requirement to not be beyond gliding distance to land. He said they needed to be about 1,600 feet above ground level (agl) across Berner's Bay and 1,500-1,800 feet agl over the water. These altitudes were not documented in the training program but were discussed during ground and flight training.

The DO stated in an interview that the word "land" as stated in the regulation was vague and did not necessarily mean suitable for landing purposes. As a policy, he said, the flights maintained gliding distance to "land" per the regulation. He said it was ultimately the pilot's decision and, if weather dictated otherwise, the pilot could do something different. He said the pilots had to make the decision between maintaining visual flight rules and gliding distance.

In an interview, a Cessna 206 and Cessna 207 captain at SeaPort Airlines stated that, if the cloud ceiling was 1,000 feet, then 3 miles visibility was required and, if the ceiling was 500 feet, then 2 miles visibility was required. He said he would rather have greater visibility as opposed to a higher ceiling, but he did not take into account gliding distance to land when choosing an altitude. He said the Cessna 207 probably needed 2,000 feet for a flight between JNU and HNH.

A chart located in the pilot's operating handbook of the accident airplane titled *Maximum Glide*[14] shows that following an engine failure, the altitude required to glide 3 miles is about 2,000 feet.

The POI stated in an interview that the operator had no specified minimum altitudes for their routes, and they were operating with cloud ceilings at 500 feet agl and 2 miles visibility over the 3-mile wide channel. She further stated 500 feet agl would not allow for the required gliding distance. Once, when she was in the SOC conducting surveillance, the weather was poor in JNU, and the flights had been on a weather hold in the morning. There was one flight enroute and one preparing for launch to Hoonah. The enroute flight was going north. In order to make gliding distance from one end to the other of Berners Bay, the planes must be about 1,600 feet. After witnessing the airplane making 360-degree turns, she observed the airplane descend to 800 feet over the channel.

The FAA FLM responsible for the SeaPort Airlines certificate was also the previous POI. When asked if he knew the ceiling and visibility requirements for Part 135 flights over open water, he stated that SeaPort Airlines used the minimum regulatory standard and did not have company minimums in place. He said that in reference to power-off gliding distance to shore, there was a regulatory standard that had to be met. Ceiling of 500 feet and 2 miles visibility would not allow for power-off glide to land, but that they had to meet the regulation. He stated that it was a changing number and up to the pilot to decide. When asked if he believed the practice of allowing the pilot to decide was adequate, he said it was not and there should have been route altitudes.

7.1.1 Terrain Awareness and Warning System

The accident airplane was equipped with two Chelton Flight Systems FlightLogic EFIS Integrated Display Units (IDUs). The IDU units are identical part numbers and are configured to

[14] See attachment 14: Maximum Glide Distance Chart

operate as primary flight displays (PFD) or multi-function displays (MFD). Using sensors, including solid state Air Data and Attitude Heading Reference System (ADAHRS), the PFD displays aircraft parameter data including altitude, airspeed, attitude, vertical speed, and heading. The MFD displays navigational information by way of a moving map and glide distance as indicated by a ring around the airplane that changes size and shape based on aircraft altitude and wind. Additionally, the units in the accident airplane included a terrain awareness and warning system (TAWS) that provided color-coded warnings of terrain on the MFD and, when enabled, aural alerts. As part of the TAWS system, the PFD was capable of providing a profile view of terrain ahead of the aircraft ("synthetic vision").

The FAA's Instrument Flying Handbook (FAA-H-8083-15B) uses the Chelton IDU to explain the concept of synthetic vision, stating, "Synthetic vision provides a realistic depiction of the aircraft in relation to terrain and flightpath. Systems such as those produced by Chelton Flight Systems, Universal Flight Systems, and others provide for depictions of terrain and course."

Each IDU contains two internally mounted flash memory devices (PCMCIA format) capable of logging flight data.

The FlightLogic EFIS IDU features integrated Class C TAWS or, optionally, Class A or B TAWS or Class A or B Helicopter TAWS (HTAWS). The IDU provides TSO-C151b TAWS functionality. Depending upon aircraft configuration settings and external sensors/switches, the system is configurable as a Class A, B or C TAWS or a Class A or B HTAWS.

The accident airplane TAWS functionality was set to Class C specifications.

Functions provided by the Class C TAWS are:

1. Terrain Display: Display of terrain and obstacles on the PFD and MFD.
2. Forward Looking Terrain Awareness ("FLTA"): A warning function that uses a terrain database and an obstruction database to alert the pilot to hazardous terrain or obstructions in front of the aircraft.
3. Premature Descent Alert ("PDA"): A warning function that alerts the pilot when descending well below a normal approach glidepath on the final approach segment of an instrument approach procedure.
4. Excessive Rate of Descent (GPWS Mode 1): A warning function that alerts the pilot when the rate of descent is hazardously high as compared to height above terrain (i.e., descending into terrain).
5. Sink Rate after Takeoff or Missed Approach (GPWS Mode 3): A warning function that alerts the pilot when a sink rate is detected immediately after takeoff or initiation of a missed approach.

A TAWS Inhibit Switch is used for manual inhibiting of TAWS alerting functions. The TAWS Inhibit Switch is of the latching type and gives an obvious indication of actuation (i.e., toggle / rocker or pushbutton with indicator light). The TAWS Inhibit Switch is connected directly to the EFIS IDU. The TAWS Inhibit Switch is activated when manual inhibiting of TAWS alerting

functions is desired. The TAWS inhibit switch on the accident airplane was found in the "inhibit" mode at the accident site.

Figure 1: Photo of TAWS inhibit switch as found at accident site

7.1.2 Forward Looking Terrain Alert Function

Forward Looking Terrain Awareness (FLTA) is a warning function that uses a terrain database to alert the pilot to hazardous terrain in front of the aircraft. It automatically adjusts for climbs, descents and turns.

7.1.3 Downloaded Data

The data from the IDU removed from the accident airplane shows the highest altitude achieved during the accident flight was 1,220 feet msl, which occurred just prior to the impact sequence.

The IDU indicated that, when the airplane was crossing Lynn Canal, at one point the airplane's altitude was 830 feet msl with the glide distance ring showing the airplane could not reach land in the event of an engine failure.[15]

8.0 Medallion Foundation

The Medallion Foundation Inc. is a federally funded, not-for-profit organization with an Internal Revenue Service (IRS) 501(c)(3) tax exemption status.

8.1.1 History

The Medallion Foundation Inc. was created in 2001 by the Alaska Air Carrier's Association with the goal of improving aviation safety in the state of Alaska, while also reducing the insurance rates for commercial air carriers. According to the Medallion history webpage, in 2002, the Medallion Foundation signed a grant agreement with the FAA "to launch a major statewide aviation safety program to establish safety standards that exceed regulatory requirements through the detection of safety trends or needs before actual accidents occur."

8.1.2 Shield Program

According to the Medallion Foundation Shield Program webpage, the purpose of the Shield Program was to create and maintain a higher level of safety through the use of system safety and

[15] See attachment 15: Chelton IDU Screenshot

safety management system principles. In order to obtain a Shield, an applicant would first need to earn a "star" in each of the following categories:

- CFIT Avoidance
- Operational Control
- Maintenance and Ground Service
- Safety
- Internal Evaluation

To earn a "star," an applicant organization must complete specific training classes, produce a required manual and undergo an external audit to determine if the company has incorporated the information into its corporate culture. Following the initial audit, annual independent audits were to be conducted.

According to the webpage, the benefits of being a Shield carrier "include reduced insurance rates, cross promotional marketing of Shield carriers and recognition by DOD, OGP and the FAA as an operator who incorporates higher standards of safety than required by regulations."

8.1.3 SeaPort Airlines' Medallion Shield

A document provided by the operator to the NTSB on March 25, 2016, dated March 23, 2009, titled "client access web site for Medallion Foundation," established a Shield Program award date of May 23, 2008.[16] The webpage displayed the stars held by SeaPort Airlines, doing business as Wings of Alaska Airlines, as Controlled Flight Into Terrain (CFIT) Avoidance, Operational Control, Safety, Internal Audit, and Maintenance and Ground Service.

8.1.4 SeaPort Airlines' Medallion Audit History

Two internal evaluation documents were received by the NTSB from SeaPort Airlines dated April, 2010, which are believed to be the most recent audits, internal or independent conducted on the Medallion Shield Program at SeaPort Airlines.

No record of completion for any external audits by Medallion Foundation personnel could be located.
The most recent CFIT Avoidance Star internal audit located during the investigation was dated April 2, 2010.[17]

The most recent Operational Control Star internal audit located during the investigation was dated April 10, 2010.[18]

The chief pilot stated in an interview that, before an audit of the Medallion program was accomplished, an individual from Medallion would travel to SeaPort Airlines for a "pre-audit." During the preaudit, the Medallion individual reviewed the records and prepared them for the audit, so the team could be there for less time and access the information easier.

[16] See attachment 16: Medallion Client Access Webpage
[17] See attachment 17: CFIT Internal Audit
[18] See attachment 18: Operational Control Internal Audit

In an interview, when the DO was asked about the relationship between SeaPort Airlines and Medallion, he stated that he had personally spoken with people from Medallion, but he had never met any of them. He said he was proud of the Medallion Shield. At the time of the interview, he said he was in the process of enhancing the relationship and getting documents "up to speed." He did not know when the last Medallion audit took place.

In an attempt to obtain the most recent audit records and audit information as it pertained to CFIT avoidance and risk mitigation, the NTSB Operations Group Chairman sent an e-mail to the Deputy Director of the Medallion Foundation on January 20, 2015 requesting such information.[19]

A response was received from the Executive Director of the Medallion Foundation stating that they would not share information regarding a carrier or their audits.[20] The e-mail further states that Medallion's concern was to not only protect the operator, but to also protect their reputation.

To date, the Medallion Foundation has not provided the information requested in the January 20, 2015, e-mail.

8.1.5 Recent Medallion Activity

SeaPort Airlines met with Medallion staff on April 21, 2015, in Juneau, Alaska, to discuss the status and necessary revisions to maintain a Medallion Shield.[21]

On May 6, 2015, SeaPort Airlines sent an e-mail to the Deputy Director of the Medallion Foundation that contained an attached letter outlining the changes to the Medallion program manuals and also contained a timeline for audits and revisions.[22] The letter of intent was dated May 5, 2015, and a draft copy was provided to the NTSB by SeaPort Airlines.[23]

On May 8, 2015, an e-mail was sent to the president of SeaPort Airlines from the Deputy Director of the Medallion Foundation responding to the letter of intent.[24] In the e-mail, the Deputy Director stated that, after discussions with the Executive Director, two options were available to SeaPort Airlines with regard to the Medallion Shield.

Option 1 would be a voluntary suspension of Shield status by SeaPort Airlines. The e-mail stated that Wings of Alaska would be removed from the list of Shield Carriers on the Medallion Foundation website, but they would not remove the status of the stars. It was further stated "With this process of voluntary suspension, there will be no official communication to the FAA, nor will we retain any records within the Medallion files kept on the participating members."

Option 2 would be an involuntary suspension of Shield status by Medallion. In this case, Medallion Foundation would "have to go through a paperwork trail, including official notification made into Medallion files."

[19] See attachment 19: E-mail Request to Medallion
[20] See attachment 20: E-mail Response from Medallion
[21] See attachment 21: Follow-up to 4/21 Meeting
[22] See attachment 22: E-mail between SeaPort and Medallion
[23] See attachment 23: Draft letter of intent from SeaPort
[24] See attachment 24: Letter of intent response

On May 15, 2015, the company president agreed to the terms set by Medallion and requested a voluntary suspension.

On June 29, 2015, a letter was sent to the president of SeaPort Airlines from the Executive Director of Medallion expressing concern with how Medallion Foundation was managing each operator's fulfillment of the CFIT avoidance program.[25] In the letter, the Executive Director of Medallion requested a copy of the CFIT avoidance program,[26] pilot roster, and CFIT avoidance training records.

When the operator responded to the June 29, 2015 letter on July 10, 2015 (which was 7 days before the accident), they indicated that the accident pilot and three other pilots had not completed initial CFIT avoidance training.[27]

According to the CFIT avoidance training records provided to Medallion by the operator, no minimum training time was required, and pilots were trained to proficiency. Of the 12 training records provided, all 12 completed the training for flat light recognition, white out recognitions, deteriorating visibility, and inadvertent IMC training in exactly 1 hour total.[28]

8.1.6 Medallion CFIT Avoidance Manual

In response to the June 29 letter from Medallion, SeaPort Airlines submitted a copy of their CFIT avoidance training manual. The manual contains policies and procedures for the dispatch and conduct of flights.

Section F of the Medallion CFIT avoidance manual[29] contains, in part:

> *Because of the unique environment of Southeast Alaska and the manner in which the aircraft are equipped, SeaPort Airlines (dba Wings of Alaska) stresses that pilots new to the Company will have operating minimums greater than those established by FAR 135.203 and 135.205.*

These policies and procedures are not contained in the FAA-accepted GOM or the FAA-approved training program. There is no regulatory requirement for compliance with the Medallion program manuals.

In an interview, the chief pilot described the Medallion program as an Alaska-specific focus that was taught by the base chief pilot. He could not recall any time that a representative from Medallion observed any of the training. He stated that the Medallion program was more of a safety program than a training program and, therefore, it was largely held under the safety umbrella. When asked about CFIT training and inadvertent IMC training, he stated that they tried

[25] See attachment 25: CFIT review letter
[26] See attachment 26: E-mail from Medallion stating that Medallion does not retain any copies of customer manuals
[27] See attachment 27: E-mail containing pilot roster
[28] See attachment 28: CFIT training records
[29] See attachment 29: CFIT avoidance training manual excerpt

to do CFIT training, but not always. It was not required and not a formal part of the training program.

When asked about CFIT training and inadvertent IMC training, the DO stated that they tried to do CFIT training, but not always. It was not required and not a formal part of the training program. He said it was a part of the Medallion program, but not always completed.

During an interview, the POI, when asked about CFIT training, stated that the operator did what was included in the training program. She said they had a Medallion Star for CFIT, but they had not had an audit and did not keep up the program.

9.0 FAA Oversight

9.1.1 Hillsboro Flight Standards District Office

The POI in the Hillsboro Flight Standards District Office (FSDO) in Hillsboro, Oregon, who was assigned to oversee SeaPort Airlines, had been employed with the FAA almost 7 years at the time of the accident. She transferred to the Hillsboro FSDO in May or June, 2014, and was assigned to the certificate in January 2015.

The POI stated in an interview that, in addition to SeaPort Airlines, she was the POI for a Part 135 air ambulance company and a Part 135 operator considered high risk. The POI was also assigned oversight of a designated pilot examiner, and she was the only inspector in the office qualified for tailwheel and turbine operations. She stated there probably should have been assistant inspectors, but they did not have the resources in the office.

The FLM in the Hillsboro FSDO who was assigned to the SeaPort certificate had been employed with the FAA about 8 years at the time of the accident. He was promoted to FLM in January, 2015, but was the POI assigned to the SeaPort Airlines certificate from 2009 until his promotion.

He stated in an interview that his unit of employees consisted of four POIs, one new hire operations inspector, one aviation safety technician, and one aviation safety assistant. When asked to comment on whether the FAA oversight of the operator was adequate prior to the accident, he stated that it was the best they could do, and it was hard to define adequate. He would have liked to have given them more focus and attention but was not able to due to staffing and other certificates. He stated he was the FLM for between 60-70 certificates. He stated that geographic oversight was critical. They used geographic oversight as much as they could, particularly the Juneau and Memphis FSDO. Normally, he was not aware of when geographic surveillance took place, only if there were problems.

A review of FAA PTRS and enforcement records by the Operations Group revealed no enforcement action or counseling had taken place with regards to gliding distance regulatory violations.

Submitted by: Shaun Williams