Aviation Investigation Final Report

Location:	Fairbanks, Alaska	**Incident Number:**	OPS11IA653
Date & Time:	June 14, 2011, 13:10 Local	**Registration:**	N121WV
Aircraft:	Beech 1900C	**Aircraft Damage:**	None
Defining Event:	Near midair/TCAS alert/loss of separation	**Injuries:**	7 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

An air traffic control operational error and near midair collision occurred between a Raytheon Beech 1900 and a Piper Navajo about 3.5 miles west of the airport. The Beech 1900 was northeast bound toward the airport descending to enter the traffic pattern for runway 20L, while the Piper had just departed from runway 20R and was climbing on a westbound heading. Both airplanes were operating under visual flight rules at the time of the incident, and were receiving air traffic control services from a tower air traffic controller. There were no reports of injuries or damage to either airplane.

The local controller, who had only been certified on the position for 5 weeks, stated that she was trying to establish vertical separation between the two airplanes by restricting the departing Navajo to remain at or below 2,000 feet. The Beech was still on the approach controller's frequency, so the local controller was not aware of what instructions had been issued to the pilot. The approach controller mistakenly believed that the Beech was in communication with the local controller. Neither the local controller nor the controller-in-charge, who was responsible for monitoring the operation and assisting the local controller, initiated any coordination with the approach controller to resolve the conflict.

NTSB review of local procedures and directives found that there was a misunderstanding of required procedures and controller responsibilities for operations in Terminal Radar Service Areas, including separation standards and procedures for transfer of communications between controllers.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: Inadequate air traffic control actions that failed to establish and maintain required separation between the two airplanes. Contributing to the incident was inexperience on the part of the local controller, inadequate oversight by the tower controller-in-charge, and deficient facility procedures and training.

Findings

Personnel issues	(general) - ATC personnel
Personnel issues	Total experience in position - ATC personnel
Personnel issues	Type/qual of instruct/training - ATC personnel
Organizational issues	Oversight of operation - ATC
Personnel issues	Decision making/judgment - ATC personnel

Factual Information

History of Flight

Approach	Air traffic event
Approach-VFR pattern downwind	Near midair/TCAS alert/loss of separation (Defining event)

SUMMARY
On June 14, 2011, at about 1310 Alaska Daylight Time (ADT), Warbelow's Air Ventures flight 401 (WAV401), a Raytheon-Beech 1900, experienced a near mid-air collision (NMAC) with Era Alaska flight 12K (ERR12K), a Piper Navajo. Both aircraft were operating under visual flight rules at the time of the incident. WAV401 was in contact with the West Radar (WR) position of Fairbanks TRACON (FAI), and ERR12K was being handled by the FAI Airport Traffic Control Tower (ATCT) local control (LC) position. WAV401 was a scheduled 14 Code of Federal Regulations (CFR) part 135 passenger flight operating from Galena, Alaska, to Fairbanks, with 2 pilots and 5 passengers. ERR12K was an on-demand 14 CFR part 135 charter flight operating from Fairbanks to Minto, Alaska, with 1 pilot and 4 passengers. There were no reports of injuries or damage to either aircraft.

The incident occurred 3.5 nautical miles southwest of the Fairbanks International Airport at approximately 2,100 feet. WAV401 was northeast bound toward the airport descending to enter the traffic pattern for runway 20L and was receiving radar service from FAI approach control. ERR12K had just departed from runway 20R, was climbing on a westbound heading, and was in communication with FAI tower. The tower controller noted the potential conflict between the two aircraft and issued three traffic advisories to ERR12K, but the pilot never reported seeing WAV401. The approach controller issued no traffic information to WAV401 about ERR12K. Immediately after the aircraft crossed paths, the pilot of WAV401 reported that a Navajo had passed 100 feet above their aircraft. The approach control then instructed the pilot of WAV401 to contact the tower. After landing, the pilot of WAV401 requested telephone contact information for the tower. The incident was reported as a NMAC by the chief pilot of Warbelow's Air Ventures about two hours later. In their statements, the crew of WAV401 reported descending to avoid the ERA aircraft.

The airspace surrounding Fairbanks is designated as a Terminal Radar Service Area (TRSA). In a TRSA, controllers are required to ensure that aircraft targets do not merge unless the aircraft have a minimum of 500 feet vertical separation or can maintain visual separation, although visual separation was not being applied in this incident. Review of radar data for WAV401 and ERR12K indicated that their radar targets merged with approximately 200 feet of vertical separation.

On June 18, the FAA reported two operational errors as a result of this incident: one for a loss

of separation between ERR12K and WAV401, and a second for a minimum vectoring altitude violation involving ERR12K when the aircraft was assigned at or below 2,000 feet in an area where the minimum assignable altitude was 2,900 to 3,700 feet.

1. History of Flight

The pilot of WAV401 first contacted the FAI West Radar approachcontroller at 1259:32, descending through 12,000 feet for 7,000 feet. The controller acknowledged the transmission and provided wind and altimeter information for FAI. At 1302, a position relief briefing began at the West Radar position, and continued until 1305:22. While the relief briefing was in progress, the controller cleared WAV401 to descend to 5,000 feet and to fly heading 045. At 1302:58, the pilot of WAV401 canceled their instrument flight rules flight plan. The controller then instructed the pilot to maintain visual flight conditions and enter right downwind for runway 20L. The pilot acknowledged. At 1310:06, WAV401 transmitted, "Approach, 401 – we just had a Navajo fly over the top of us. We're going to switch to tower now. We never got the call." The controller responded, "…sorry, I thought I switched you, you can contact tower."

The pilot of ERR12K first contacted the FAI local control position at 1302:11, and reported ready in sequence for departure from runway 20R. At 1306:06, the local controller cleared ERR12K for takeoff, and instructed the pilot to turn right on course. At 1307:15, the pilot of ERR12K requested to climb on course. The local controller asked what the on-course heading would be, and the pilot responded, "278." The controller approved the on course heading, and advised the pilot of traffic, "…a B190 [Beech 1900] inbound seven miles to the southwest at 3,000 for…landing on the left." The pilot replied, "…looking for the Beech ERR12K." At 1309:12, the controller transmitted, "ERR12K Beech 1900 traffic ahead to your right two miles, 2,700, correction ahead to left about 11 o'clock." The pilot of ERR12K again responded that she was looking for the traffic. At 1309:24, the controller instructed the pilot of ERR12K to maintain at or below 2,000 feet. The pilot responded, "OK, then I will be going north for a little while." At 1309:49, the local controller provided another traffic advisory to ERR12K, describing WAV401's position as, "…ahead and to your left about half mile 2,300, Beech 1900." The pilot then requested a right 360 degree turn. At 1310:16, the local controller canceled the altitude restriction and instructed ERR12K to again proceed on course. At 1310:24, WAV401 contacted the local controller, reporting, "…we just got switched over to you now, we got the PA31 [Navajo] in sight." As WAV401 entered the pattern there were some sequencing issues with aircraft not involved in the incident. After the landing sequence was established, the aircraft landed safely.

The pilot of WAV401 called the tower after landing to discuss the incident with the CIC. The call was not recorded, but when the pilot reported the incident he initially declined to file a near midair-collision (NMAC) report. The chief pilot of Warbelow's Air Ventures called the tower about two hours later and did file a NMAC report.

2. Radar Data

Radar data for this incident was obtained from the ASR-11 radar system located near Fairbanks airport. The radar data file has been entered in the docket.

PERSONNEL STATEMENTS

The pilot of WAV401 provided the following statement via Warbelow's Air Ventures:

I was the Captain (PIC) of flight 401 from Galena to Fairbanks on June 14, 2011, with a copilot (SIC.)

Approximately 15 miles west of the field, we canceled our IFR clearance and were told by FAI approach to enter the right downwind for 20R. Upon entering downwind just abeam the FAI VOR, the copilot, who was flying the plane, said "oh ****!" and immediately initiated a descent. I looked out his windshield and saw an ERA PA-31 in a right bank approximately 100 to 150 feet above us. I queried the controller that we had just had another aircraft pass over the top of us, and he said he did not have the aircraft on radar. I asked if he wanted us to switch to tower, which he replied that he thought he had, but the copilot confirmed to me he had not. (The controller had been busy trying to keep two VFR [aircraft] separated northwest of the airport.)

Upon switching to tower frequency, we overheard "12K traffic no factor and continue the turn on course." This was the aircraft that had flown over us. We were cleared to land by the tower controller, and while on base over the University, were told to continue northbound to follow a Cessna 152 on a 2 mile base. Seeing this traffic moving from our 11 to 12 o'clock position, I took the controls from the copilot and started the northbound turn. Several planes were in the pattern for 20L, and confusion on who was to be following whom. I told the controller we would continue the left turn and be able to land on 20R. After clearing the runways, I asked for the tower phone number and [was] given the supervisor's initials.

When I called the supervisor, he apologized for the mix-up on the landing sequence and said the controller was new. I told him that wasn't my concern, but the near midair was. He was unaware of any separation conflict, and I had to explain what had happened. I was told ERR12K had been cleared for takeoff on 20R, but because of another ERA aircraft being cleared to land on 2L, was told to turn westbound after takeoff. This of course, is the direction we were entering the downwind from. I suggested to the tower supervisor that maybe too many opposite direction takeoff and landings were being granted with "summer only" pilots and student pilots in the pattern, as a possible fatal accident nearly occurred with long time commercial pilots flying near the airport.

FAI Controller in Charge (CIC)

The CIC stated that around the time of the incident the tower workload was moderately busy, with some complex operations. The only activity around the tower that might have been a distraction was that there were some Technical Operations people working on the catwalk just

outside the tower windows. He also noted that there were an inordinate amount of phone calls coming into the tower that day, many of which were administrative in nature and had nothing to do with air traffic control.

The CIC was monitoring tower operations from the position next to the Automatic Terminal Information Service (ATIS) machine and working with the local controller on "the crossover", which is how he referred to the procedure that resulted in the NMAC. The CIC stated that normally departing aircraft were instructed to fly runway heading after departure. However, when ERR12K departed, runway heading was not usable because another aircraft was inbound to the airport from the south. He felt that giving an intermediate heading on departure would have worked well in this situation, but that at FAI the only two options that seem to be utilized were to fly runway heading or proceed on course.

The CIC was aware of the conflict and assumed that the approach controller was keeping WAV401 high for some reason. The local controller tried to establish 500 feet of vertical separation. He heard her make repeated traffic calls and felt that she was mitigating the conflict as best she could considering that she did not have communications with WAV401. He believed that WAV401 was well above ERR12K when they passed. There was no coordination between tower and approach. The CIC stated that this was a mistake on his part, in that he should have called approach and coordinated.

The CIC recalled the pilot of ERR12K saying that she needed to do a 360 degree turn. As he watched, it appeared that ERR12K and WAV401 would cross over with WAV401 well above ERR12K, and he believed they had until receiving the call from the pilot of WAV401 after landing.

The CIC said he was not aware that an operational error (OE) had occurred. He said that appropriate separation was 500 feet vertical or visual separation, and he thought WAV401 had been level at 2,500 feet for quite a while and that was why the local controller gave ERR12K an altitude restriction to maintain at or below 2,000 feet. The CIC stated that he was never aware that either pilot thought their aircraft had passed too closely until later when the pilot of WAV401 called the tower.

When asked what a safety alert was and why one hadn't been issued in this case, the CIC stated that a safety alert was a last resort to warn a pilot of a potential collision or imminent contact with another aircraft if something wasn't done. The CIC felt that the local controller probably didn't issue a safety alert because it visually appeared that the aircraft would pass with adequate separation, and that WAV401 descended unexpectedly after remaining at 2,500 feet for such a long time. The radar data tags were overlapping, and the controllers couldn't read the altitudes on the tower radar display.

The CIC was aware that the local controller had only been certified a short time, but he had not worked with her a lot and was not familiar with her overall performance. He felt that he was generally supervising rather than coaching, or keeping a closer eye on her as a newly qualified

controller.

When asked about the difference in services provided to aircraft in a TRSA and in Class D airspace, the CIC stated that there was no difference in services provided except that tower visual separation could be applied in Class D airspace.

The CIC described the general responsibilities of his position as general supervision, maintaining good traffic flow, monitoring local control to ensure separation, and being a second set of eyes. He noted that the CIC is responsible for handling operational calls such as notifications of airspace status, outages, etc, but is also required to answer and reroute administrative calls that really shouldn't come to the cab. There are direct lines to the tower cab, TRACON and administrative area, but 75% of the calls taken in the tower cab are routed to the supervisor's desk downstairs.

When asked what was discussed during the phone call from the pilot of WAV401, the CIC stated that he first started out apologizing to the pilot for the pattern sequencing issues since he assumed that was the reason for the call. The pilot then stated the reason for the call was how closely ERR12K had flown over his aircraft. This was the first time the CIC realized that there was an issue with a possible NMAC, so he asked the pilot if he wanted to file a NMAC report and the pilot responded no. The CIC stated that he did not make a quality assurance review entry into the log about the event because the pilot did not ask to file a NMAC report or express any concerns about the sequencing.

The CIC estimated that only 15% of requests for opposite direction operations were denied. He stated that opposite direction operations were often solicited by the tower, but did not recall any Standard Operating Procedures (SOP) addressing their use.

When asked if he had any recommendations, the CIC stated that recorded position relief briefings were far too long and laborious, so much so that it would be easy for a controller to forget the first thing mentioned in the briefing by the time it is finished. This could have been the reason that WAV401 was never switched to the tower, because the fact that he was still on frequency was the first item in a very long relief briefing.

When asked about strip marking, the CIC stated that flight strips were not a requirement at FAI.

The CIC did not recall receiving any training on D-BRITE usage or operations within a TRSA.

FAI Ground Controller (GC)

At the time of the incident, the ground controller was assisting another controller trainee with familiarization on the functions of the position, and was not closely monitoring the activities at the local control position. She was aware that after landing, the pilot of WAV401 called and spoke with the CIC about something that happened during the flight. Sometime later the chief pilot from the company called the tower as well.

When asked about TRSA procedures, the ground controller stated that required separation was either visual, 500 feet vertically, or "green between." (Target resolution.) Aircraft were typically assigned runway heading until being allowed to turn on course. Radar separation was required throughout the TRSA. However, tower controllers used different methods to apply separation, because they were not operating as radar controllers. It was normal practice for local controllers to retain aircraft on their frequency until all conflicts were resolved, and to then transfer communications to the departure controller. The ground controller stated that, as a tower controller, she would never advise a pilot of radar contact. The departure controller does that. She stated that it was common for inbound aircraft to enter the class D airspace without first establishing communications, but not so much for aircraft that had been working with the approach controllers. Various issues could cause communication difficulties. If an aircraft approached the airport without establishing communications, the ground controller noted that controllers would be required to use the light gun to communicate clearances.

Controllers at FAI were given a minimum vectoring altitude (MVA) test during training. The ground controller stated that at various points in training controllers were sometimes given the answers along with the test, in effect being told "Here are the answers – fill it out." In her opinion, the classroom training provided at FAI was not adequate. She stated that the instructors did not know anything about FAI, and when asked, one said she didn't even know where the boundaries of the TRSA were. Her impression was that there was no curriculum, no syllabus, and that the training materials incorporated much out-of-date information. Some of the materials included old charts, and some even had old runway identifications dating from before the magnetic variation of the airport had changed. The ground controller had a training review board that required a re-run of her local control classroom training. Much of the material she was given in the training included references that did not apply to FAI operations. When asked if she was learning what she should be learning, the ground controller stated that through the training program, she was not. The deficiencies in the classroom training required trainees and instructors to make up for the missing knowledge during on-the-job training. She stated, "…you get put in classroom training but come out not knowing anything." The ground controller stated that studying of ATC materials is heavily encouraged at FAI, and that controllers have sufficient time to study at work without needing to take materials home.

Asked about TRSA sequencing, the ground controller stated that the objective of the approach controller was to give the local controller a workable sequence. In general, if a problem is something local control can work out, local control should do it. If there was a conflict that local could not be expected to fix, then approach should fix it. There was not a lot of coordination between the tower and the approach control about sequencing. The controllers just understood who should be doing the sequencing, did it, and it worked.

The ground controller stated that pilot requests for opposite direction operations were generally accommodated, but it depended on circumstances. She stated that such requests were usually approved 75% of the time or more. Her personal practice was to set the tower radar display range to about 30 nautical miles, although she might look out to 60 miles if

necessary to see what was coming. She noted that controllers did not typically operate with the MVA chart selected because it caused a lot of clutter on the radar display.

When asked if there were any limitations on altitude assignments in TRSA airspace, the ground controller stated that she had never been told that she needed to comply with minimum vectoring altitude restrictions when making altitude assignments.

The ground controller stated that when the incident occurred, the CIC was engaged in assisting the local controller both by looking out of the window and watching what the local controller was doing.

FAI Local Controller (LC)

The local controller entered on duty with the FAA on April 7, 2010, at the FAA Academy in Oklahoma City, OK. She was assigned to FAI ATCT on July 12, 2010, and completed training on the local control position on May 3, 2011.

The only potentially distracting operational circumstance she recalled was that there were five Technical Operations personnel working on the tower catwalk and occasionally walking in front of the windows. However, she didn't think that activity had any effect on this incident.

The local controller cleared ERR12K for takeoff on runway 20R from taxiway N, and instructed the pilot to proceed on course. After the aircraft became airborne, it continued straight out for about 1.5 miles. The pilot then requested to turn on course. The local controller was initially going to tell the pilot to continue straight out, but the CIC recommended that she let ERR12K make the turn in order to avoid another aircraft inbound to FAI runway 2 from the south. After ERR12K turned westbound on course, the local controller provided a traffic advisory to the pilot about WAV401 inbound from the east. Soon afterward, she gave ERR12K another traffic advisory about WAV401, this time reporting the aircraft's location as 11 o'clock, two miles, 2,700 feet. To provide vertical separation from WAV401, the locao controller instructed the pilot to remain at or below 2,000 feet. The pilot then responded that she would have to turn northbound. Shortly afterward, the local controller provided another traffic call, reporting WAV401's location as 1/2 mile away at 2,300 feet. The pilot responded that she would be making a 360 degree turn. Ms. Styer saw that WAV401 and ERR12K had passed each other, so she canceled the altitude restriction and allowed ERR12K to proceed on course. WAV401 checked on frequency and the pilot reported that a Navajo had just passed above them.

The local controller said that it was not unusual for the approach control to transfer communications on an aircraft after it had already entered the class D airspace. When that occurred, she sometimes contacted the radar controller to ask them to switch the aircraft to tower frequency. She did not do so in this case, because she assumed that the approach controller was retaining the aircraft to provide separation from ERR12K, or was going to transfer the aircraft in time for her to do so.

The local controller stated that she had not noticed a conflict alert involving the two aircraft on the radar display, although she did hear the aural alarm after they had passed. She did not immediately recognize the event as a possible operational error, although she became more concerned after the chief pilot of Warbelow's Air Ventures called the tower CIC to complain and file a NMAC report. Until then, the local controller had not realized how close together the aircraft had been.

The local controller stated that her classroom training at FAI was mostly composed of generic Oklahoma City materials that she had seen before. There was not much discussion of specific FAI procedures or anything about TRSA separation applied by local control. Procedures she was told to use included having departure aircraft continue flying runway heading and provide a frequency change to the radar departure controller. Requirements for TRSA separation within class D airspace did not come up. There were also discussions of altitude restrictions, but no discussion of the minimum altitude requirements contained in FAA order 7110.65 for TRSA operations. The local controller stated that there were differences of opinion among controllers at FAI regarding what they were required to do with aircraft operating in TRSA airspace.

Asked what she would do differently now, the local controller stated that she should have issued ERR12K a heading to provide separation from the runway 2 arrival as well as from WAV401. She also could have initiated coordination with the approach controller sooner, or reached out to obtain communications with WAV401. Setting the tower radar display to a shorter range might have helped her awareness of the situation as well.

The local controller stated that traffic alerts were required when aircraft were converging, and that a traffic alert should include the aircraft identification, position of the traffic, direction of flight, and a suggested action. She was unable to quote the portions of FAA order 7110.65 that address coordination of safety alerts between controllers.

During her training, the local controller was given some instruction on the use of the tower radar display. The instruction mainly concerned the functions of the various knobs and controls, and how to change the range of the display. Discussion of the actual use of the radar display included maintenance of traffic awareness, altitudes of aircraft in the vicinity of the airport, etc. Her personal practice was to set the range of the tower radar display to approximately 30 nautical miles.

The local controller stated that, in her opinion, the classroom training provided at FAI was inadequate. The classroom instructors were unfamiliar with FAI operations. Overall, training was more difficult because of the deficiencies in classroom training. The local controller stated that she had to learn a lot of the academic material during on-the-job training. Her impression was that the tests given to controllers were not very relevant to the job and that most of the tests were also issued on an open book basis. The on-the-job training provided was better than the classroom training.

The local controller stated that the facility SOP says to either leave departing aircraft on runway heading, or clear them on course. Ms. Styer additionally stated that her training on how to handle "crossover" traffic was to either leave the aircraft on departure heading straight out, or turn it to pass behind the arrival traffic.

When asked why she thought that the pilot of ERR12K said she needed to turn northbound after being restricted to 2,000 feet, the local controller responded "terrain."

The local controller stated that opposite direction arrivals can usually be accommodated by the controllers, although she has occasionally had to decline such requests.

The local controller stated that her expectation of what the CIC would be doing was that he would be monitoring her, providing assistance, monitoring frequencies as needed and otherwise providing help and advice about the operation. While the ground controller was present in the cab, the local controller stated that she was substantially occupied with explaining the various aspects of the GC position to a developmental controller who was about to begin training.

Coordination between the tower and the radar controllers was good for the most part, and FAI controllers worked as a team. The SOP provided examples of when the tower controller was responsible for sequencing and when the radar controller was expected to provide sequencing.

FAI West Radar Controller

The approach controller took over the West Radar position a few minutes before the incident. He recalled that the position relief briefing was extended because there was pop-up traffic that the outgoing controller had to respond to. Traffic was moderate and of low complexity the day of the incident. After assuming responsibility for the position, the approach controller stated that he took a couple of minutes to clean up "loose ends." He believed that he had transferred communications on WAV401 to the tower. He did not use any memory aids for indicating that communications had been transferred on the aircraft because there was no good way to do that using the Automated Radar Terminal System (ARTS). When asked if he noticed the conflict alert between WAV401 and ERR12K, the approach controller stated that he looked at the two aircraft when they were 2 to 3 miles apart, and thought that the local controller was working it out.

When asked to discuss safety alerts, the approach controller stated that safety alerts were a first priority duty, and were required when a controller noticed that there was a possibility of a conflict with other traffic or terrain. He said that FAI controllers were "not really good at safety alerts" because they separated aircraft under TRSA procedures before safety alerts become necessary. At the time that the conflict was occurring between WAV401 and ERR12K, the approach controller stated that he was also occupied with control actions involving a Stationair and another aircraft elsewhere in the sector.

The approach controller stated that he was aware of the experience level of the local controller, but believed that what he was seeing was the result of her "working too hard." The approach controller further stated that it never occurred to him that WAV401 might still have been on his frequency.

The approach controller stated that when providing TRSA sequencing, it was normal for the local controller to sequence aircraft on downwind versus on base, while the radar controller sequenced aircraft straight in versus base entries or aircraft operating on opposite base entries.

The approach controller stated that if necessary, the CIC's should have coordinated between the local and approach controllers and issued instructions as necessary to manage traffic or complexity. The approach controller stated that on-the-job training instructors try to teach new local controllers to coordinate their needs with the West Radar approach controller. However, staffing limitations sometimes meant that standalone CIC's were unavailable for this function.

When asked about the quality of classroom preparation for training, the approach controller stated that trainees were often missing a foundation of local area knowledge. He provided an example where a ground control trainee had to be taught how to do strip marking during on-the-job training, which was something that the approach controller believed should have been taught during classroom training. The current facility staff support and Raytheon training instructors had never been certified at FAI, and did not have the local area knowledge or locally-based curriculum needed to provide local knowledge to controllers. According to the approach controller, this had been a long-standing issue. He has suggested to facility management that one of the certified controllers in the facility work with the staff and Raytheon to develop a local curriculum for use during training.

Radar controllers used flight strips for IFR inbounds and all departures, but not for VFR inbounds.

When asked if standalone CIC's were common at FAI, the approach controller stated that they were not common, but had been used more recently because several of the tower controllers were not certified to work the CIC position. Therefore, the CIC position had to be operated separately.

The approach controller stated that the controllers assigned to FAI on a temporary basis to assist during the summer peak traffic season were helpful, but using them was a "Band-Aid solution." The temporary controllers working at FAI this summer had been "pretty good" and had all been certified at FAI before. He noted that in 2010 the facility received five temporary controllers, but for various reasons only two of them were usable by the facility. The approach controller stated that training of the temporary controllers after they arrived at the facility was abbreviated. He was uncertain whether the amount of training given to the temporary controllers met local standards for minimum training time, and he was uncertain whether the temporary controllers that were returning to the facility after previously being certified there

were being treated as re-certifications or certified controllers in training. The approach controller believed it would be better to increase the permanent staffing of the facility so that the temporary controllers were not needed.

The approach controller suggested that the facility should increase the visibility and involvement of supervisors in the operational area, and in coordination between the tower and radar. He rarely saw supervisors in the operational areas. He also stated that the training program needed improvement. On-the-job training instructors tried to make up for deficiencies in the classroom training, but he believed that the preparation given to trainees was not adequate.

When asked if the local SOP limited controllers to offering departing aircraft either runway heading or an on course departure, the approach controller stated that controllers were free to coordinate other headings if necessary.

Information

Certificate:	**Age:**
Airplane Rating(s):	**Seat Occupied:**
Other Aircraft Rating(s):	**Restraint Used:**
Instrument Rating(s):	**Second Pilot Present:**
Instructor Rating(s):	**Toxicology Performed:**
Medical Certification:	**Last FAA Medical Exam:**
Occupational Pilot:	**Last Flight Review or Equivalent:**
Flight Time:	

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N121WV
Model/Series:	1900C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Transport; Unknown	**Serial Number:**	UC-78
Landing Gear Type:	Tricycle	**Seats:**	19
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Turbo prop
Airframe Total Time:		**Engine Manufacturer:**	P&W CANADA
ELT:		**Engine Model/Series:**	PT6A-60A
Registered Owner:	SNOBOW INC	**Rated Power:**	1050 Horsepower
Operator:	WARBELOWS AIR VENTURES INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	WVBA

Meteorological Information and Flight Plan

Conditions at Accident Site:		**Condition of Light:**	
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:		**Type of Flight Plan Filed:**	VFR
Destination:	Fairbanks, AK	**Type of Clearance:**	VFR;Traffic advisory
Departure Time:		**Type of Airspace:**	TRSA

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	None
Passenger Injuries:	5 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	
Total Injuries:	7 None	**Latitude, Longitude:**	64.809875,-147.720413(est)

Administrative Information

Investigator In Charge (IIC):	Dunham, Scott
Additional Participating Persons:	
Original Publish Date:	April 24, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=80779

Aviation Investigation Final Report

Location:	Fairbanks, Alaska	**Incident Number:**	OPS11IA653
Date & Time:	June 14, 2011, 13:10 Local	**Registration:**	N4112K
Aircraft:	Piper PA-31-350	**Aircraft Damage:**	None
Defining Event:	Near midair/TCAS alert/loss of separation	**Injuries:**	5 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

An air traffic control operational error and near midair collision occurred between a Raytheon Beech 1900 and a Piper Navajo about 3.5 miles west of the airport. The Beech 1900 was northeast bound toward the airport descending to enter the traffic pattern for runway 20L, while the Piper had just departed from runway 20R and was climbing on a westbound heading. Both airplanes were operating under visual flight rules at the time of the incident, and were receiving air traffic control services from a tower air traffic controller. There were no reports of injuries or damage to either airplane.

The local controller, who had only been certified on the position for 5 weeks, stated that she was trying to establish vertical separation between the two airplanes by restricting the departing Navajo to remain at or below 2,000 feet. The Beech was still on the approach controller's frequency, so the local controller was not aware of what instructions had been issued to the pilot. The approach controller mistakenly believed that the Beech was in communication with the local controller. Neither the local controller nor the controller-in-charge, who was responsible for monitoring the operation and assisting the local controller, initiated any coordination with the approach controller to resolve the conflict.

NTSB review of local procedures and directives found that there was a misunderstanding of required procedures and controller responsibilities for operations in Terminal Radar Service Areas, including separation standards and procedures for transfer of communications between controllers.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: Inadequate air traffic control actions that failed to establish and maintain required separation between the two airplanes. Contributing to the incident was inexperience on the part of the local controller, inadequate oversight by the tower controller-in-charge, and deficient facility procedures and training.

Findings

Personnel issues	(general) - ATC personnel
Personnel issues	Total experience in position - ATC personnel
Personnel issues	Type/qual of instruct/training - ATC personnel
Organizational issues	Oversight of operation - ATC
Personnel issues	Decision making/judgment - ATC personnel

Factual Information

History of Flight

Initial climb	Air traffic event
Initial climb	Near midair/TCAS alert/loss of separation

SUMMARY
On June 14, 2011, at about 1310 Alaska Daylight Time (ADT), Warbelow's Air Ventures flight 401 (WAV401), a Raytheon-Beech 1900, experienced a near mid-air collision (NMAC) with Era Alaska flight 12K (ERR12K), a Piper Navajo. Both aircraft were operating under visual flight rules at the time of the incident. WAV401 was in contact with the West Radar (WR) position of Fairbanks TRACON (FAI), and ERR12K was being handled by the FAI Airport Traffic Control Tower (ATCT) local control (LC) position. WAV401 was a scheduled 14 Code of Federal Regulations (CFR) part 135 passenger flight operating from Galena, Alaska, to Fairbanks, with 2 pilots and 5 passengers. ERR12K was an on-demand 14 CFR part 135 charter flight operating from Fairbanks to Minto, Alaska, with 1 pilot and 4 passengers. There were no reports of injuries or damage to either aircraft.

The incident occurred 3.5 nautical miles southwest of the Fairbanks International Airport at approximately 2,100 feet. WAV401 was northeast bound toward the airport descending to enter the traffic pattern for runway 20L and was receiving radar service from FAI approach control. ERR12K had just departed from runway 20R, was climbing on a westbound heading, and was in communication with FAI tower. The tower controller noted the potential conflict between the two aircraft and issued three traffic advisories to ERR12K, but the pilot never reported seeing WAV401. The approach controller issued no traffic information to WAV401 about ERR12K. Immediately after the aircraft crossed paths, the pilot of WAV401 reported that a Navajo had passed 100 feet above their aircraft. The approach control then instructed the pilot of WAV401 to contact the tower. After landing, the pilot of WAV401 requested telephone contact information for the tower. The incident was reported as a NMAC by the chief pilot of Warbelow's Air Ventures about two hours later. In their statements, the crew of WAV401 reported descending to avoid the ERA aircraft.

The airspace surrounding Fairbanks is designated as a Terminal Radar Service Area (TRSA). In a TRSA, controllers are required to ensure that aircraft targets do not merge unless the aircraft have a minimum of 500 feet vertical separation or can maintain visual separation, although visual separation was not being applied in this incident. Review of radar data for WAV401 and ERR12K indicated that their radar targets merged with approximately 200 feet of vertical separation.

On June 18, the FAA reported two operational errors as a result of this incident: one for a loss of separation between ERR12K and WAV401, and a second for a minimum vectoring altitude

violation involving ERR12K when the aircraft was assigned at or below 2,000 feet in an area where the minimum assignable altitude was 2,900 to 3,700 feet.

1. History of Flight

The pilot of WAV401 first contacted the FAI West Radar approachcontroller at 1259:32, descending through 12,000 feet for 7,000 feet. The controller acknowledged the transmission and provided wind and altimeter information for FAI. At 1302, a position relief briefing began at the West Radar position, and continued until 1305:22. While the relief briefing was in progress, the controller cleared WAV401 to descend to 5,000 feet and to fly heading 045. At 1302:58, the pilot of WAV401 canceled their instrument flight rules flight plan. The controller then instructed the pilot to maintain visual flight conditions and enter right downwind for runway 20L. The pilot acknowledged. At 1310:06, WAV401 transmitted, "Approach, 401 – we just had a Navajo fly over the top of us. We're going to switch to tower now. We never got the call." The controller responded, "…sorry, I thought I switched you, you can contact tower."

The pilot of ERR12K first contacted the FAI local control position at 1302:11, and reported ready in sequence for departure from runway 20R. At 1306:06, the local controller cleared ERR12K for takeoff, and instructed the pilot to turn right on course. At 1307:15, the pilot of ERR12K requested to climb on course. The local controller asked what the on-course heading would be, and the pilot responded, "278." The controller approved the on course heading, and advised the pilot of traffic, "…a B190 [Beech 1900] inbound seven miles to the southwest at 3,000 for…landing on the left." The pilot replied, "…looking for the Beech ERR12K." At 1309:12, the controller transmitted, "ERR12K Beech 1900 traffic ahead to your right two miles, 2,700, correction ahead to left about 11 o'clock." The pilot of ERR12K again responded that she was looking for the traffic. At 1309:24, the controller instructed the pilot of ERR12K to maintain at or below 2,000 feet. The pilot responded, "OK, then I will be going north for a little while." At 1309:49, the local controller provided another traffic advisory to ERR12K, describing WAV401's position as, "…ahead and to your left about half mile 2,300, Beech 1900." The pilot then requested a right 360 degree turn. At 1310:16, the local controller canceled the altitude restriction and instructed ERR12K to again proceed on course. At 1310:24, WAV401 contacted the local controller, reporting, "…we just got switched over to you now, we got the PA31 [Navajo] in sight." As WAV401 entered the pattern there were some sequencing issues with aircraft not involved in the incident. After the landing sequence was established, the aircraft landed safely.

The pilot of WAV401 called the tower after landing to discuss the incident with the CIC. The call was not recorded, but when the pilot reported the incident he initially declined to file a near midair-collision (NMAC) report. The chief pilot of Warbelow's Air Ventures called the tower about two hours later and did file a NMAC report.

2. Radar Data

Radar data for this incident was obtained from the ASR-11 radar system located near

Fairbanks airport. The radar data file has been entered in the docket.

PERSONNEL STATEMENTS

The pilot of WAV401 provided the following statement via Warbelow's Air Ventures:

I was the Captain (PIC) of flight 401 from Galena to Fairbanks on June 14, 2011, with a copilot (SIC.)

Approximately 15 miles west of the field, we canceled our IFR clearance and were told by FAI approach to enter the right downwind for 20R. Upon entering downwind just abeam the FAI VOR, the copilot, who was flying the plane, said "oh ****!" and immediately initiated a descent. I looked out his windshield and saw an ERA PA-31 in a right bank approximately 100 to 150 feet above us. I queried the controller that we had just had another aircraft pass over the top of us, and he said he did not have the aircraft on radar. I asked if he wanted us to switch to tower, which he replied that he thought he had, but the copilot confirmed to me he had not. (The controller had been busy trying to keep two VFR [aircraft] separated northwest of the airport.)

Upon switching to tower frequency, we overheard "12K traffic no factor and continue the turn on course." This was the aircraft that had flown over us. We were cleared to land by the tower controller, and while on base over the University, were told to continue northbound to follow a Cessna 152 on a 2 mile base. Seeing this traffic moving from our 11 to 12 o'clock position, I took the controls from the copilot and started the northbound turn. Several planes were in the pattern for 20L, and confusion on who was to be following whom. I told the controller we would continue the left turn and be able to land on 20R. After clearing the runways, I asked for the tower phone number and [was] given the supervisor's initials.

When I called the supervisor, he apologized for the mix-up on the landing sequence and said the controller was new. I told him that wasn't my concern, but the near midair was. He was unaware of any separation conflict, and I had to explain what had happened. I was told ERR12K had been cleared for takeoff on 20R, but because of another ERA aircraft being cleared to land on 2L, was told to turn westbound after takeoff. This of course, is the direction we were entering the downwind from. I suggested to the tower supervisor that maybe too many opposite direction takeoff and landings were being granted with "summer only" pilots and student pilots in the pattern, as a possible fatal accident nearly occurred with long time commercial pilots flying near the airport.

FAI Controller in Charge (CIC)

The CIC stated that around the time of the incident the tower workload was moderately busy, with some complex operations. The only activity around the tower that might have been a distraction was that there were some Technical Operations people working on the catwalk just outside the tower windows. He also noted that there were an inordinate amount of phone calls

coming into the tower that day, many of which were administrative in nature and had nothing to do with air traffic control.

The CIC was monitoring tower operations from the position next to the Automatic Terminal Information Service (ATIS) machine and working with the local controller on “the crossover”, which is how he referred to the procedure that resulted in the NMAC. The CIC stated that normally departing aircraft were instructed to fly runway heading after departure. However, when ERR12K departed, runway heading was not usable because another aircraft was inbound to the airport from the south. He felt that giving an intermediate heading on departure would have worked well in this situation, but that at FAI the only two options that seem to be utilized were to fly runway heading or proceed on course.

The CIC was aware of the conflict and assumed that the approach controller was keeping WAV401 high for some reason. The local controller tried to establish 500 feet of vertical separation. He heard her make repeated traffic calls and felt that she was mitigating the conflict as best she could considering that she did not have communications with WAV401. He believed that WAV401 was well above ERR12K when they passed. There was no coordination between tower and approach. The CIC stated that this was a mistake on his part, in that he should have called approach and coordinated.

The CIC recalled the pilot of ERR12K saying that she needed to do a 360 degree turn. As he watched, it appeared that ERR12K and WAV401 would cross over with WAV401 well above ERR12K, and he believed they had until receiving the call from the pilot of WAV401 after landing.

The CIC said he was not aware that an operational error (OE) had occurred. He said that appropriate separation was 500 feet vertical or visual separation, and he thought WAV401 had been level at 2,500 feet for quite a while and that was why the local controller gave ERR12K an altitude restriction to maintain at or below 2,000 feet. The CIC stated that he was never aware that either pilot thought their aircraft had passed too closely until later when the pilot of WAV401 called the tower.

When asked what a safety alert was and why one hadn’t been issued in this case, the CIC stated that a safety alert was a last resort to warn a pilot of a potential collision or imminent contact with another aircraft if something wasn’t done. The CIC felt that the local controller probably didn’t issue a safety alert because it visually appeared that the aircraft would pass with adequate separation, and that WAV401 descended unexpectedly after remaining at 2,500 feet for such a long time. The radar data tags were overlapping, and the controllers couldn’t read the altitudes on the tower radar display.

The CIC was aware that the local controller had only been certified a short time, but he had not worked with her a lot and was not familiar with her overall performance. He felt that he was generally supervising rather than coaching, or keeping a closer eye on her as a newly qualified controller.

When asked about the difference in services provided to aircraft in a TRSA and in Class D airspace, the CIC stated that there was no difference in services provided except that tower visual separation could be applied in Class D airspace.

The CIC described the general responsibilities of his position as general supervision, maintaining good traffic flow, monitoring local control to ensure separation, and being a second set of eyes. He noted that the CIC is responsible for handling operational calls such as notifications of airspace status, outages, etc, but is also required to answer and reroute administrative calls that really shouldn't come to the cab. There are direct lines to the tower cab, TRACON and administrative area, but 75% of the calls taken in the tower cab are routed to the supervisor's desk downstairs.

When asked what was discussed during the phone call from the pilot of WAV401, the CIC stated that he first started out apologizing to the pilot for the pattern sequencing issues since he assumed that was the reason for the call. The pilot then stated the reason for the call was how closely ERR12K had flown over his aircraft. This was the first time the CIC realized that there was an issue with a possible NMAC, so he asked the pilot if he wanted to file a NMAC report and the pilot responded no. The CIC stated that he did not make a quality assurance review entry into the log about the event because the pilot did not ask to file a NMAC report or express any concerns about the sequencing.

The CIC estimated that only 15% of requests for opposite direction operations were denied. He stated that opposite direction operations were often solicited by the tower, but did not recall any Standard Operating Procedures (SOP) addressing their use.

When asked if he had any recommendations, the CIC stated that recorded position relief briefings were far too long and laborious, so much so that it would be easy for a controller to forget the first thing mentioned in the briefing by the time it is finished. This could have been the reason that WAV401 was never switched to the tower, because the fact that he was still on frequency was the first item in a very long relief briefing.

When asked about strip marking, the CIC stated that flight strips were not a requirement at FAI.

The CIC did not recall receiving any training on D-BRITE usage or operations within a TRSA.

FAI Ground Controller (GC)

At the time of the incident, the ground controller was assisting another controller trainee with familiarization on the functions of the position, and was not closely monitoring the activities at the local control position. She was aware that after landing, the pilot of WAV401 called and spoke with the CIC about something that happened during the flight. Sometime later the chief pilot from the company called the tower as well.

When asked about TRSA procedures, the ground controller stated that required separation was either visual, 500 feet vertically, or "green between." (Target resolution.) Aircraft were typically assigned runway heading until being allowed to turn on course. Radar separation was required throughout the TRSA. However, tower controllers used different methods to apply separation, because they were not operating as radar controllers. It was normal practice for local controllers to retain aircraft on their frequency until all conflicts were resolved, and to then transfer communications to the departure controller. The ground controller stated that, as a tower controller, she would never advise a pilot of radar contact. The departure controller does that. She stated that it was common for inbound aircraft to enter the class D airspace without first establishing communications, but not so much for aircraft that had been working with the approach controllers. Various issues could cause communication difficulties. If an aircraft approached the airport without establishing communications, the ground controller noted that controllers would be required to use the light gun to communicate clearances.

Controllers at FAI were given a minimum vectoring altitude (MVA) test during training. The ground controller stated that at various points in training controllers were sometimes given the answers along with the test, in effect being told "Here are the answers – fill it out." In her opinion, the classroom training provided at FAI was not adequate. She stated that the instructors did not know anything about FAI, and when asked, one said she didn't even know where the boundaries of the TRSA were. Her impression was that there was no curriculum, no syllabus, and that the training materials incorporated much out-of-date information. Some of the materials included old charts, and some even had old runway identifications dating from before the magnetic variation of the airport had changed. The ground controller had a training review board that required a re-run of her local control classroom training. Much of the material she was given in the training included references that did not apply to FAI operations. When asked if she was learning what she should be learning, the ground controller stated that through the training program, she was not. The deficiencies in the classroom training required trainees and instructors to make up for the missing knowledge during on-the-job training. She stated, "…you get put in classroom training but come out not knowing anything." The ground controller stated that studying of ATC materials is heavily encouraged at FAI, and that controllers have sufficient time to study at work without needing to take materials home.

Asked about TRSA sequencing, the ground controller stated that the objective of the approach controller was to give the local controller a workable sequence. In general, if a problem is something local control can work out, local control should do it. If there was a conflict that local could not be expected to fix, then approach should fix it. There was not a lot of coordination between the tower and the approach control about sequencing. The controllers just understood who should be doing the sequencing, did it, and it worked.

The ground controller stated that pilot requests for opposite direction operations were generally accommodated, but it depended on circumstances. She stated that such requests were usually approved 75% of the time or more. Her personal practice was to set the tower radar display range to about 30 nautical miles, although she might look out to 60 miles if necessary to see what was coming. She noted that controllers did not typically operate with

the MVA chart selected because it caused a lot of clutter on the radar display.

When asked if there were any limitations on altitude assignments in TRSA airspace, the ground controller stated that she had never been told that she needed to comply with minimum vectoring altitude restrictions when making altitude assignments.

The ground controller stated that when the incident occurred, the CIC was engaged in assisting the local controller both by looking out of the window and watching what the local controller was doing.

FAI Local Controller (LC)

The local controller entered on duty with the FAA on April 7, 2010, at the FAA Academy in Oklahoma City, OK. She was assigned to FAI ATCT on July 12, 2010, and completed training on the local control position on May 3, 2011.

The only potentially distracting operational circumstance she recalled was that there were five Technical Operations personnel working on the tower catwalk and occasionally walking in front of the windows. However, she didn't think that activity had any effect on this incident.

The local controller cleared ERR12K for takeoff on runway 20R from taxiway N, and instructed the pilot to proceed on course. After the aircraft became airborne, it continued straight out for about 1.5 miles. The pilot then requested to turn on course. The local controller was initially going to tell the pilot to continue straight out, but the CIC recommended that she let ERR12K make the turn in order to avoid another aircraft inbound to FAI runway 2 from the south. After ERR12K turned westbound on course, the local controller provided a traffic advisory to the pilot about WAV401 inbound from the east. Soon afterward, she gave ERR12K another traffic advisory about WAV401, this time reporting the aircraft's location as 11 o'clock, two miles, 2,700 feet. To provide vertical separation from WAV401, the locao controller instructed the pilot to remain at or below 2,000 feet. The pilot then responded that she would have to turn northbound. Shortly afterward, the local controller provided another traffic call, reporting WAV401's location as 1/2 mile away at 2,300 feet. The pilot responded that she would be making a 360 degree turn. Ms. Styer saw that WAV401 and ERR12K had passed each other, so she canceled the altitude restriction and allowed ERR12K to proceed on course. WAV401 checked on frequency and the pilot reported that a Navajo had just passed above them.

The local controller said that it was not unusual for the approach control to transfer communications on an aircraft after it had already entered the class D airspace. When that occurred, she sometimes contacted the radar controller to ask them to switch the aircraft to tower frequency. She did not do so in this case, because she assumed that the approach controller was retaining the aircraft to provide separation from ERR12K, or was going to transfer the aircraft in time for her to do so.

The local controller stated that she had not noticed a conflict alert involving the two aircraft on

the radar display, although she did hear the aural alarm after they had passed. She did not immediately recognize the event as a possible operational error, although she became more concerned after the chief pilot of Warbelow's Air Ventures called the tower CIC to complain and file a NMAC report. Until then, the local controller had not realized how close together the aircraft had been.

The local controller stated that her classroom training at FAI was mostly composed of generic Oklahoma City materials that she had seen before. There was not much discussion of specific FAI procedures or anything about TRSA separation applied by local control. Procedures she was told to use included having departure aircraft continue flying runway heading and provide a frequency change to the radar departure controller. Requirements for TRSA separation within class D airspace did not come up. There were also discussions of altitude restrictions, but no discussion of the minimum altitude requirements contained in FAA order 7110.65 for TRSA operations. The local controller stated that there were differences of opinion among controllers at FAI regarding what they were required to do with aircraft operating in TRSA airspace.

Asked what she would do differently now, the local controller stated that she should have issued ERR12K a heading to provide separation from the runway 2 arrival as well as from WAV401. She also could have initiated coordination with the approach controller sooner, or reached out to obtain communications with WAV401. Setting the tower radar display to a shorter range might have helped her awareness of the situation as well.

The local controller stated that traffic alerts were required when aircraft were converging, and that a traffic alert should include the aircraft identification, position of the traffic, direction of flight, and a suggested action. She was unable to quote the portions of FAA order 7110.65 that address coordination of safety alerts between controllers.

During her training, the local controller was given some instruction on the use of the tower radar display. The instruction mainly concerned the functions of the various knobs and controls, and how to change the range of the display. Discussion of the actual use of the radar display included maintenance of traffic awareness, altitudes of aircraft in the vicinity of the airport, etc. Her personal practice was to set the range of the tower radar display to approximately 30 nautical miles.

The local controller stated that, in her opinion, the classroom training provided at FAI was inadequate. The classroom instructors were unfamiliar with FAI operations. Overall, training was more difficult because of the deficiencies in classroom training. The local controller stated that she had to learn a lot of the academic material during on-the-job training. Her impression was that the tests given to controllers were not very relevant to the job and that most of the tests were also issued on an open book basis. The on-the-job training provided was better than the classroom training.

The local controller stated that the facility SOP says to either leave departing aircraft on

runway heading, or clear them on course. Ms. Styer additionally stated that her training on how to handle "crossover" traffic was to either leave the aircraft on departure heading straight out, or turn it to pass behind the arrival traffic.

When asked why she thought that the pilot of ERR12K said she needed to turn northbound after being restricted to 2,000 feet, the local controller responded "terrain."

The local controller stated that opposite direction arrivals can usually be accommodated by the controllers, although she has occasionally had to decline such requests.

The local controller stated that her expectation of what the CIC would be doing was that he would be monitoring her, providing assistance, monitoring frequencies as needed and otherwise providing help and advice about the operation. While the ground controller was present in the cab, the local controller stated that she was substantially occupied with explaining the various aspects of the GC position to a developmental controller who was about to begin training.

Coordination between the tower and the radar controllers was good for the most part, and FAI controllers worked as a team. The SOP provided examples of when the tower controller was responsible for sequencing and when the radar controller was expected to provide sequencing.

FAI West Radar Controller

The approach controller took over the West Radar position a few minutes before the incident. He recalled that the position relief briefing was extended because there was pop-up traffic that the outgoing controller had to respond to. Traffic was moderate and of low complexity the day of the incident. After assuming responsibility for the position, the approach controller stated that he took a couple of minutes to clean up "loose ends." He believed that he had transferred communications on WAV401 to the tower. He did not use any memory aids for indicating that communications had been transferred on the aircraft because there was no good way to do that using the Automated Radar Terminal System (ARTS). When asked if he noticed the conflict alert between WAV401 and ERR12K, the approach controller stated that he looked at the two aircraft when they were 2 to 3 miles apart, and thought that the local controller was working it out.

When asked to discuss safety alerts, the approach controller stated that safety alerts were a first priority duty, and were required when a controller noticed that there was a possibility of a conflict with other traffic or terrain. He said that FAI controllers were "not really good at safety alerts" because they separated aircraft under TRSA procedures before safety alerts become necessary. At the time that the conflict was occurring between WAV401 and ERR12K, the approach controller stated that he was also occupied with control actions involving a Stationair and another aircraft elsewhere in the sector.

The approach controller stated that he was aware of the experience level of the local

controller, but believed that what he was seeing was the result of her "working too hard." The approach controller further stated that it never occurred to him that WAV401 might still have been on his frequency.

The approach controller stated that when providing TRSA sequencing, it was normal for the local controller to sequence aircraft on downwind versus on base, while the radar controller sequenced aircraft straight in versus base entries or aircraft operating on opposite base entries.

The approach controller stated that if necessary, the CIC's should have coordinated between the local and approach controllers and issued instructions as necessary to manage traffic or complexity. The approach controller stated that on-the-job training instructors try to teach new local controllers to coordinate their needs with the West Radar approach controller. However, staffing limitations sometimes meant that standalone CIC's were unavailable for this function.

When asked about the quality of classroom preparation for training, the approach controller stated that trainees were often missing a foundation of local area knowledge. He provided an example where a ground control trainee had to be taught how to do strip marking during on-the-job training, which was something that the approach controller believed should have been taught during classroom training. The current facility staff support and Raytheon training instructors had never been certified at FAI, and did not have the local area knowledge or locally-based curriculum needed to provide local knowledge to controllers. According to the approach controller, this had been a long-standing issue. He has suggested to facility management that one of the certified controllers in the facility work with the staff and Raytheon to develop a local curriculum for use during training.

Radar controllers used flight strips for IFR inbounds and all departures, but not for VFR inbounds.

When asked if standalone CIC's were common at FAI, the approach controller stated that they were not common, but had been used more recently because several of the tower controllers were not certified to work the CIC position. Therefore, the CIC position had to be operated separately.

The approach controller stated that the controllers assigned to FAI on a temporary basis to assist during the summer peak traffic season were helpful, but using them was a "Band-Aid solution." The temporary controllers working at FAI this summer had been "pretty good" and had all been certified at FAI before. He noted that in 2010 the facility received five temporary controllers, but for various reasons only two of them were usable by the facility. The approach controller stated that training of the temporary controllers after they arrived at the facility was abbreviated. He was uncertain whether the amount of training given to the temporary controllers met local standards for minimum training time, and he was uncertain whether the temporary controllers that were returning to the facility after previously being certified there were being treated as re-certifications or certified controllers in training. The approach

controller believed it would be better to increase the permanent staffing of the facility so that the temporary controllers were not needed.

The approach controller suggested that the facility should increase the visibility and involvement of supervisors in the operational area, and in coordination between the tower and radar. He rarely saw supervisors in the operational areas. He also stated that the training program needed improvement. On-the-job training instructors tried to make up for deficiencies in the classroom training, but he believed that the preparation given to trainees was not adequate.

When asked if the local SOP limited controllers to offering departing aircraft either runway heading or an on course departure, the approach controller stated that controllers were free to coordinate other headings if necessary.

Information

Certificate:	**Age:**
Airplane Rating(s):	**Seat Occupied:**
Other Aircraft Rating(s):	**Restraint Used:**
Instrument Rating(s):	**Second Pilot Present:**
Instructor Rating(s):	**Toxicology Performed:**
Medical Certification:	**Last FAA Medical Exam:**
Occupational Pilot:	**Last Flight Review or Equivalent:**
Flight Time:	

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4112K
Model/Series:	PA-31-350	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	31-8353006
Landing Gear Type:	Tricycle	**Seats:**	8
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	LYCOMING
ELT:		**Engine Model/Series:**	TIO-540 SER
Registered Owner:	ICECAP LLC TRUSTEE	**Rated Power:**	310 Horsepower
Operator:	ERA AVIATION INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	ERAA

Meteorological Information and Flight Plan

Conditions at Accident Site:		**Condition of Light:**	
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Fairbanks, AK (FAI)	**Type of Flight Plan Filed:**	VFR
Destination:		**Type of Clearance:**	VFR
Departure Time:		**Type of Airspace:**	Air traffic control;TRSA

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	None
Passenger Injuries:	4 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	
Total Injuries:	5 None	**Latitude, Longitude:**	64.809875,-147.720413(est)

Administrative Information

Investigator In Charge (IIC):	Dunham, Scott
Additional Participating Persons:	
Original Publish Date:	April 24, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=80779