



TIM AREL

POSITIONS:

- 2022-present, chief operating officer of FAA's Air Traffic Organization, the top job at ATO
- 2022-2024, chair of the Latin American and Caribbean CANSO CEO Committee (CANSO stands for Civil Air Navigation Services Organisation)
- 2017-2022, deputy chief operating officer in charge of domestic air traffic operations and manager of ATO Officers Group
- 2015-16, vice president in charge of the Air Traffic Services unit
- 2015, deputy vice president in the Air Traffic Services unit
- 2013-2015, deputy vice president in the Safety and Technical Training unit
- 2010-2013, manager of the Air Traffic Control Investigations Team
- 1989-2010, air traffic controller
- 1985-1989, U.S. Air Force air traffic controller specialist reaching rank of sergeant

NOTABLES:

- Between shifts as an FAA air traffic controller, worked as a police officer, emergency medical technician and 911 operator in Uxbridge, Massachusetts.
- Leads the organization that comprises two-thirds of FAA's personnel.
- In 1999, while listening back to controller conversations, discovered a near collision at T.F. Green International Airport in Rhode Island that led to an NTSB investigation.
- Enlisted in the U.S. Air Force at 17.

AGE: 57

RESIDES: Arlington, Virginia

EDUCATION: Graduate of the Air Force Air Traffic Control School and the FAA Academy in Oklahoma. Holds certificates from the Leadership for a Democratic Society program of the Federal Executive Institute and from the Driving Government Performance program at Harvard's Kennedy School of Government. Has completed approximately two years of college courses over the years.

Chaos tamer

Tim Arel's task is to lead FAA's 14,000 controllers and the flying public through what might be the most challenging era in the history of the Air Traffic Organization, the 24-year-old arm of FAA he oversees. Coming out of the pandemic, U.S. travelers were rattled by a series of narrowly averted airliner collisions, and now a shortage of controllers could complicate efforts to sustain the decline in runway incursions seen since 2023. Arel spoke with me by video about the initiatives he launched to address incursions and also fill ATO's hiring pipeline; whether the planned Department of Government Efficiency, or DOGE, can help; and what kind of people make great controllers. — *Ben Iannotta*

Q: Let's start off by looking back to look forward. How did your time as a controller differ from what controllers experience today?

A: We didn't have as many automated support tools, and we were not as advanced in managing our flows of traffic, collaborating with industry in real time. So there were greater amounts of uncontrolled demand and lots of starts and stops based on surges of traffic. Now, it is more metered. It certainly is as busy as it ever was. Overall, the basic job — the separation of aircraft, particularly in the terminal environment, where I worked — is still the same.

Q: When you were a controller, were there any runway incursions that you recall?

A: As a matter of fact, while I was a quality assurance specialist and responsible for conducting safety investigations, one of the more serious runway incursions prior to the ones we've experienced in the last few years was in Providence, Rhode Island, where a US Air on a foggy day was repeatedly cleared for takeoff, while a United was lost out on the runway. You may remember a FedEx had just taken off. There was a big NTSB [National Transportation Safety Board] investigation. I'm the one who found that event and reported it, investigated it.

Q: Wow. How did you find it?

A: We had something unusual happen the night before. I went and listened to our recordings. We didn't have the proactive reporting that we have now. One of the things I'm most proud of is our transparency now. When mistakes are made, no matter who made them, we encourage proactive reporting. As long as someone is honest and there was no active negligence, we don't punish them. We want them to fully disclose, in a protected environment, anything that may have occurred. We learn from that, and we build mitigations in.

He's referring to the Air Traffic Safety Action Program started in 2008 to shift controllers into a Just Culture quality management approach. — B.I.

The reason why we have close calls and not an unfortunate accident is because we have layers of mitigations in place between the flight crew, the air traffic personnel, the technology. People can make mistakes, but you have alarms or barriers or things that trigger that reporting or reaction for someone to step in and take action, which is why, overall, the number of runway incursions is trending down slightly. The majority are our lowest of classifications. There's a line stopping you from entering the runway or telling the pilot not to go beyond that line. There are times where an airplane is taxiing and going just over the line. And if the controller says "stop" on the radio or the pilot realizes they've taxied too far, but they're over the line, it's still a runway incursion — but they didn't actually enter the runway. When I was a controller in the field, they changed that. It used to be that you had to actually enter the runway. Once it became, "you go over the line," our number of runway incursions went up. So for the last 20-something years, it's a big spike from the previous time before. Now, an incursion is from "no chance of collision" all the way to the ones that are close calls.

Q: So the change wouldn't have affected the recent spike in incursions.

A: No. In the most recent spike, there were two things that occurred. One, you had our recovery from covid. As we ramped operations back up, the number of incursions also went up at a steady rate associated with that. But what we saw in the last couple of years was a rise in potentially significant runway incursions: category As and Bs. There has been no one thing anybody could point to. That's why FAA did a Call to Action. We had a Safety Summit we stood up out at MITRE. We identified several approaches to deal with that issue. The rise, though, I would attribute to an increase in high-tempo operations. There are things that are just basic practices and — I don't want to call it rustiness — but there was a lull in

"We're always going to have humans in the loop, at least for the foreseeable future."



▲ FAA's Air Traffic

Organization has the task of maintaining safe and efficient operations as the number of passenger flights continues to grow. Atlanta's Hartsfield-Jackson International Airport was the busiest airport in the world in 2023, recording 104.7 million passengers and 7775,818 arriving and departing aircraft.

Darryl Brooks via Shutterstock

operations during covid, and now it was back strong. A high-tempo airport is something amazing to watch: people choreographing the movement of an aircraft, and if the controller or the pilots are not in tune with what's happening, and if something's out of sync, it's easy for mistakes to occur.

Q: What help can AI be in all this?

A: AI, for us, is something that is already present in our systems to a degree. As you know, a lot of people are mystified by AI. They're intimidated. They don't realize that a lot of it is doing high-speed computing, looking at a lot of historical data and applying a decision-support tool. We're always going to have humans in the loop, at least for the foreseeable future, when it comes to separating aircraft or routing around weather or choosing our optimal rate or configuration of an airport or of any piece of airspace. However, controllers benefit from any information that can be

provided to them in a timely fashion, whether it's recognizing a conflict and alerting the controller or providing alternative tasks. In other words, here's the conflict. Here are two or three options, and the controller can choose. In the en route world, where aircraft are moving at high altitudes on set trajectories, you have time to recognize conflicts. That timeline becomes very narrow as you come closer and closer to that airport environment where airplanes are operating in a close geometry. So there are tools like our Surface Awareness Initiative, where we're using the ADS-B [Automated Dependence Surveillance, Broadcast] equipage mandate that you don't have to have traditional radar to see everything anymore. If people are emitting a signal, it tells you a lot of information about that aircraft. We deployed that situational awareness tool in less than 12 months from the Safety Summit, and it's already making a difference. It has seen some saves where it's raised the level of awareness, where



that tower controller previously did not have a radar display in their tower, because radar can be cost-prohibitive. We're building some safety logic into our tools, like the Approach Runway Verification that can detect something that the human eye might not be able to discern, where an aircraft is lining up for the wrong runway. A lot of our towers are a mile away from the approach. This tool actually can see that path better than our human eyes. It triggers an alert. The controller is then able to issue direction for that aircraft to go around.

Q: NAV Canada has rolled out a tool that lets managers predict shift needs going forward. The U.K. has Project Bluebird, where they're testing in a safe environment how far they can take AI. Is FAA looking at any of that?

A: AI is what I see in our decision-support tools. As far as shift predictability, we work closely with NAV

Canada. The newly appointed CEO of NAV Canada is coming down to meet with me in January at the same time as the head of NATS U.K. I was just at Heathrow Airport at their center in Swanwick, looked at their digital tower. I've been in their learning lab. We have a tech center in Atlantic City that's always testing new technology; what is viable, what's not. We've deployed much of our NextGen. We have sort of the base framework for our modernization effort and new tools developed in collaboration with NATCA [National Air Traffic Controllers Association], our controllers union. As far as shift management, we have several different tools, and we're always asking other countries what they're working on. I sit on an international board with a lot of my peers from around the world. Right now, the greatest area that we see AI helping in is training. You and I were trained by learning things longhand. This generation learns completely differently than we did. Right now, our training pipeline is what I would say is our greatest need. That's where I'm looking for AI and simulation to help the most right now.

Q: The reason I'm asking so much about AI is because we've got a transition of administrations, and I wonder if somebody's going to come in and say, "Dude, you're slow to pick up AI."

A: I would say that if all the aircraft were equipped the same, that would be true, but we don't have everybody using the same type of equipment. That's one of our challenges in maintaining and operating this NAS. There's the legacy National Airspace System, there's the currently modern one, and there's the one of the future —

Q: So this variety of equipment makes it hard to roll out AI tools?

A: Because how do they interact with us? Communications is the biggest challenge. Someone flying in a Piper Cub or Robinson helicopter is just going to pick up the microphone and want to do everything verbally, whereas your modern airliners are exchanging clearances text, DataComm.

Q: Wouldn't it be a no-brainer, though, to have a tool that says, "Dave, are you sure you wanted to direct the aircraft there?" Or maybe there's something like that now.

A: There is something like that now. In the en route world, there is Conflict Probe. It'll detect and say there's a conflict 5 minutes, 10 minutes down the road. In the terminal environment, that's the safety logic of the STARS approach verification system. It does say, "Wrong runway, wrong runway."



STARS is short for Standard Terminal Automation Replacement System, software that contains an “Approach Runway Verification” function, FAA explains on its website. — B.I.

On the ASDE-X, it will issue a loud alert, and the controller will issue the aircraft-to-go around instruction.

Airport Surface Detection Equipment, Model X is a surveillance network created to track aircraft and vehicles on the ground to “reduce critical Category A and B runway incursions,” explains FAA — B.I.

Those are all reactive alarms. There are less things that do what you’re saying: hearing the instruction the controller is giving and saying, “Are you sure?” There is a very simple piece of technology, Runway Incursion Device, or RID, that we’re deploying to 77 airports. As you’re trying to transmit an [incorrect]

clearance, it’s going to repeat over and over to you, “Runway closed, runway closed.” It’s basically blocking you from clearing someone for takeoff or to land. Not all voice recognition software is working, though, particularly with the speed at which aviation instructions are related. If you’ve ever listened to an ATC on the radio, there are varying degrees of success on voice recognition. As much as we want to have alerts, we don’t want to have the potential downside, and it is a nuisance alert, right? We don’t want it saying: “Are you sure?” “Yes, I’m sure. I know what I’m doing; get out of my way.” So, yes, I would very much like to proactively preempt a questionable instruction. However, finding the right balance is something we work closely in collaborating with our workforce on testing.

Q: You mentioned training. I saw coming out of the Safety Summit a need for unusual circumstances training. What does that mean?

A: There are airport locations that are normally good weather locations. They don’t see fog very often, or snow. We’ve had runway incursions where the tower controller could not see out of the tower cab and was relying on physical position reports of aircraft in order



▲ “Beautiful movement of aircraft”: Planes line up for takeoff last year at Vilnius International Airport in Lithuania.

Karolis Kavolelis via Shutterstock

to give instructions. For one particular airport that had a challenge, we made sure that they got our newest tower simulator capability first, the idea being put them into the simulator to train them on things they don't see very often, whether it is a certain runway configuration, strong seasonal winds or a heavy volume day. We need to lean into our simulation capability to create those scenarios and train people so that they're not seeing them for the first time in the real world.

Q: About the Department of Government Efficiency that we've probably all heard about, what do you anticipate your interactions with that being? Do you need more efficiency?

A: Two things. One, we are focused on safety, and right behind that, you will always hear efficiency. The Air Traffic Organization and the FAA as a whole are committed to transparency and collaboration. So whether we're working with our workforce, the Hill, industry or the incoming administration, we want to be transparent. We put all of our challenges, all of our demands and expectations on the table and then collaborate toward what the best solution is. We are running the largest, busiest and most complex national airspace system in the world. We're pretty darn efficient, and we run more high-tempo operation airports, in total, than any of my counterparts around the world. Remember, as we're becoming more efficient, we are also trying to integrate drones, commercial space, advanced air mobility. We want to provide equitable access to the airspace. So as we're doing that, we want to be safe at all times, but we need to make sure that we're balancing the needs of everyone looking for that access. We welcome new ideas and the opportunity to show people what we're doing. I think we have a proud story to tell.

Q: Speaking of new ideas, how many schools do you anticipate participating in the Enhanced Air Traffic-Collegiate Training Initiative that lets students bypass the Oklahoma academy?

A: Our team has just reviewed and approved, I think, up to four schools now.

Indeed, the schools are Embry-Riddle Aeronautical University, University of North Dakota, University of Oklahoma, and Tulsa Community College. — B.I.

There are over 25 that are interested. We've constructed this very carefully to make sure they meet all of our criteria to include audio and visual

recordings of their graded evaluations so that our regulator can review those evaluations and make sure that they are being tested properly and that they're passing those simulations. All of that meets the same criteria that we have in our academy in Oklahoma. We have schools that are ready to provide graduates for us in the spring semester. They're currently going through their program. It's an initial effort now, but it was important to set up that framework and expand our throughput capability, not to mention resiliency, in that we don't want to have all of our training in one location that also happens to be in Tornado Alley. So we think it'll be the largest growing segment of our future pipeline.

Q: The technology is really interesting, but air traffic controller sounds like a grueling job. Why should a young person want to take that up as a profession?

A: It is not for everyone. It is one of the best-compensated positions in federal government because it is one of the most challenging. This is a great job for anyone who enjoys bringing order from what looks to be chaos. I have that background in public safety; I've always enjoyed helping people and bringing order to a scene. It's the same for an air traffic controller. You're orchestrating this beautiful movement of aircraft and it's perfectly sequenced, and that's because controllers are stepping in and providing timely direction, working closely with their counterparts operating the aircraft. Key is someone with a good short-term memory and the ability to make a decision and move onto the next issue. It is not always the person with a doctorate in mathematics, because if you spend too much time analyzing the problem and not solving the problem, you're not going to be a successful controller. When I was going through the academy over 30 years ago, the psychologists that were meeting with us were trying to figure out who makes the best air controller. Short order cooks and shoe salespeople did very well. Having a pilot background is also beneficial. Being familiar with aviation is beneficial, but you don't have to have an aviation background. Many of our controllers are private pilots, and many are not. I am not. Sometimes it works to your advantage to have an understanding of the system and being able to help pilots. Other times, it's you're not flying the plane; you need to control the sequence of all of the airplanes. The important thing is that we will teach you what you need to know about aviation. It is a unique skill set, but there are plenty of people who enjoy that. And it's not unique to air traffic control. There are people in emergency management, medicine, police work that really are drawn to that kind of work environment, and we're no different. ★