



**U.S. SENATE COMMITTEE ON  
COMMERCE, SCIENCE & TRANSPORTATION**  
*Senator Maria Cantwell, Chair*

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**U.S. Senator Maria Cantwell**

**Senate Committee on Commerce, Science, and Transportation**

**Hearing on FAA Organization Designation Authorization (ODA) Expert Panel**

**Report**

**April 17, 2024**

**Opening Statement**

**VIDEO**

**Sen. Cantwell:** Good morning, the Senate Committee on Commerce, Science, and Transportation will come to order. I want to thank our witnesses who are here today on the FAA ODA organization expert panel report. I also want to recognize our former colleague, Peter DeFazio, is in the audience and I thank him for his work on the ACSAA legislation with this Committee.

Today, we will hear from three experts on the Organization Designation Authorization (ODA) Expert Panel's final report.

I appreciate the witnesses being here today, but I want to acknowledge, this is directly from the report that "the successful completion of this report was made possible with the cooperation and assistance of the following organizations: the Federal Aviation Administration, the Boeing Company, American Airlines, Bell Textron Inc., the University of Southern California, Viterbi School of Engineering, and special thanks to Brittney Goodwin, Mina Mitchell and Heather Thorson, and analysis supported by Data and Assessments Team within the office of FAA's ODA Office.

I want to mention that because you're the representatives of all of those people today. We could have had many people here but wanted to appreciate the work of the two chairs of the committee, and for you being here as representatives to these individuals today.

We are joined by:

Dr. Javier de Luis, Lecturer of Massachusetts Institute of Technology's Department of Aeronautics and Astronautics,

Dr. Tracy Dillinger, Manager for Safety Culture and Human Factors at NASA, and

Dr. Najmedin Meshkati, Professor, University of Southern California School of Engineering, Aviation Safety and Security Program.

The expert panel's 53 recommendations regarding Boeing's ODA, Safety Management System, and safety culture serves as an important catalyst for future aviation safety legislation. While we have made safety improvements through the aircraft certification reform law – and some of that is still playing out with the new administrator who I think is more aggressively taking the responsibilities of the Act seriously – we look to build on those advancements with a 5-year FAA reauthorization bill and some enhanced safety features, but we're not going to stop there. There is more to be done to implement the recommendations from your report.

We owe a debt of gratitude to those who are here today. I want to specially thank you, Dr. de Luis, for being here. I can't imagine the tragedy of losing your sister in one of the MAX crashes. And then continuing to be involved in trying to correct and improve our safety culture. But I can just say, I so appreciate you being here and the active role that you have played in all of these discussions.

The expert panel's final report focused on the importance of the Safety Management Systems (SMS).

While Boeing was required to adopt an SMS in 2015 as part of an FAA settlement agreement, and while the FAA later adopted standards for voluntary SMS programs, the expert panel's report makes it clear now that we need a real SMS with teeth. Both Boeing and the FAA need strong and effective Safety Management Systems — not in name – but in reality.

Safety Management System might for the public sound like management strategies that maybe they shouldn't pay attention to, but when it comes to this management strategy and it revolves around aviation, it is about saving lives.

That is why section 102 of ACSAA required that the FAA develop a real SMS standard for aviation manufacturers, and the FAA expects to finalize that SMS rule this June.

This Expert Panel made several recommendations and findings about the safety culture and about ODA and I want to highlight some:

Boeing's Safety Management System procedures are not thoroughly understood throughout the company. I'm sure you'll expand on this. That it is only focused on only 1 of the 4 pillars of what ICAO, the international standard has said that you have to meet if you're going to have an SMS program understood by the workforce at large. I'm sure you'll expand on this.

The expert panel raised concerns about FAA's ability to effectively oversee Boeing's SMS. I believe the FAA not only needs a strong workforce strategy to exercise the oversight of the manufacturers to ensure proper implement of SMS. I'd like to query the panel today on exactly what SMS the FAA should implement in their own house to make

sure that they are improving the safety culture and standing up on these important safety measures.

Right now, we are relying on employee safety reporting system "Speak Up" which you talked about. And I think comprehensive safety reporting system that employees know and understand has to be a key component of SMS.

Documentation provided by the interviewers of Boeing employees show that they may not have understood how safety fit into the culture of the overall obligations of the company.

Human factors have not been prioritized as a technical discipline. And human factors are at the core focus of what we need to do both at the FAA and at Boeing.

While I think you did talk about the loss of experience and capability of a workforce, we definitely want to build that expertise throughout the government, clearly at the FAA so that they can keep pace with technological change.

While the restructuring of Boeing's ODA unit did decrease the opportunity, as your report is saying, retaliation. We still are seeing that interference is occurring. This is unacceptable. ACSAA strengthened the FAA's oversight and put them in charge of these employees and we certainly expect the FAA to back up those individual engineers and machinists who are calling out safety and making sure that they address those.

Although the final report gave Boeing 6 months to make this action plan a reality, the expert panel's recommendations, the FAA Administrator Mike Whitaker has cut this to 90 days.

I expect the company to comply with this deadline and submit a serious plan that demonstrates this commitment to these kind of safety measures.

And FAA must also demonstrate that it is going to be a strong regulator on these issues. I hope to query the panel about how to ensure that, how we as the oversight committee of FAA basically strengthen this oversight by the FAA.

So I look forward to hearing from our witnesses today. Again, thank you so much for being here.

## First Round of Q&A

### VIDEO

**Sen. Cantwell:** Well, thank you to all the witnesses. Appreciate you being here.

I think I have a question, just generally, I want to draw this out a little bit from your report, because you've, again, emphasized it, but some of these terms may just be lost on people in their significance, and so I'm just trying to understand.

You're saying there isn't a singular culture program on safety that is understood by the employees, or that is implemented or responded to by the employees? And, and again, I want to make sure, because I'm going to get to a question about SPEEA and machinists. Because the frontline people are saying, these are the safety problems, they're just not being backed up. And so I want to understand why the phenomenon exists.

And I think your report says, because there's three different programs, and people don't know which one to pay attention to at any given time. Is that a correct understanding?

**Dr. Javier de Luis:** If I may, I think there are a couple of things there, I'll just try to tease them out.

It is true that there is an overwhelming amount of documentation on SMS and safety culture at Boeing. But as has been described to me by someone recently, it's sort of like if you're trying to teach your kid to drive, and you give them the statute book on all the road rules, but what they really want is the driver's manual.

And what you're referring to is one observation that we made, is that while all the documentation that exists right now on SMS and safety culture, checks all the boxes that ICAO says you're supposed to, for the person on the ground turning the bolts and hammering the nails, they don't know, we asked at all of our interviews, we said, what's the safety metric, are you working towards? How do you know that you're doing a safe thing?

And we got the deer in the headlights, there's, what are you talking about? Oh, safety, you know, we have production metrics, we got this metric. But there wasn't anything about that. So that was one thing.

I think the thing you're referring to about it being multiple ways, there are multiple reporting ways right now at Boeing. And that's not necessarily a bad thing. Having multiple ways of reporting is good and is encouraged. The problem we found was that they just didn't seem to, there was lack of confidence in say, for example, if you tried to report it anonymously, there was lack of confidence that there would be an anonymous, that would be maintained, there was a lack of confidence that things would actually get done about what you were doing, and there was a very real fear of retribution and payback if you held your ground.

And obviously, those are things that are just not compatible with any sort of safety culture or SMS system.

**Sen. Cantwell:** Any of the other witnesses want to add to that?

**Dr. Tracy Dillinger:** Boeing has been working to develop and field a safety culture model throughout the organization. They've been successful in providing training on some of the elements of it, they have not yet put it all together so that it works together as a system.

At NASA, we use the DNA logo for it, all of those parts work together. When someone reports something, somebody has to listen to it, the way they treat them has to be fair, there needs to be an environment of psychological safety. They need to learn from that, and communicate it, and pass it on. And to create that everybody in the system needs to know what they're supposed to do, and how to do it, and what's expected of them. And if that doesn't work, they need to know the next option. And if that doesn't work, they need to know the next option.

That's why having multiple reporting systems can be a good thing, because if one doesn't work, the employee needs to know what else they can go to. One of the things, for example, would be to know who is the Chief of Safety. That would be where the buck stops. And in one of the surveys that we saw, 95% of the people who responded to the survey did not know who the Chief of Safety was. That a deficit that could be corrected, but people need to learn who the key people are in that system, so they know who they can go to when the processes don't work.

**Sen. Cantwell:** Well, I wonder to what degree this committee, I did as ranking member of the committee, then, a whistleblower report that detailed in 2021 an FAA engineer Michael Collins describing an instance where the FAA management overruled an engineer regarding a lithium ion battery in the 787, notably, later the FAA had to ground the 787 in response to fires caused by the very lithium ion batteries.

So there was an instance where people were not listening to what people were saying on the line, what needed to be done. There's another incidence where Dr. Martin Bickeboeller stated that a more secure safety reporting system may have prevented him from facing retaliation for filing complaints about different components not meeting FAA standards.

So, how do we ensure that those who are speaking up about safety measures get listened to? I'm sure in this case these two knew who to go to, just because they're very experienced people, but they weren't listened to. So what do we do with this part of the problem, what do we need to do with the FAA?

**Dr. De Luis:** Well, in a properly functioning SMS, and a properly functioning safety culture, those questions wouldn't be asked, right? Because people would be empowered, people would have confidence that they wouldn't be smacked down if they spoke up.

I don't think that's what we're dealing with here, which is one of the reasons, by the way, that we, in one of our recommendations, we encouraged, we recommended that Boeing establish what are called ASAP programs, Aviation Safety Action Programs. They're very common in airlines, and an ASAP program is a tripartite program. It has the FAA, the labor, and management, and if you initiate an ASAP event, you're protected. But more importantly than being protected, the event gets visibility at the FAA level, as well as the management level.

And for me, when I started on this committee, I quickly became a big convert to visibility, because I am convinced that if enough eyes had seen the MCAS design ten years ago, somebody would have raised their hand and said, hey, wait a second, maybe having a system that if one sensor failed it crashes the airplane to the ground, is not the best idea. But they didn't, because as was noted it was purposely hidden, right.

**Sen. Cantwell:** Well, just to be clear, there were whistleblowers who did bring this up and said that it was unsafe, but they weren't listened to, so this is why we're saying good engineering, as I think you'll agree, wins the day, but people have to listen to the engineers. So we're trying to discover here what kind of, look, our committee can only do the oversight of the FAA that enforces the FAA to do its oversight job correctly, and we want to know what we need to do to strengthen this.

## Second Round of Q&A

### VIDEO

**Sen. Cantwell:** On that point about the ASAP because I don't want it to get too confusing about existing systems, Dr. De Luis you are saying if somebody knew about the batteries or the MCAS, that what you want is a larger universe of people, not just one engineer talking to one line manager. You want broader awareness, and you want a broader awareness even at the FAA so it is not just one person overriding the line manager.

**Dr. De Luis:** Right, senator. I'm a belt and suspenders kind of guy. I think you need to have more visibility to prevent the things that we saw on MCAS in Congressman DeFazio's report, where one person can basically hide the existence or suppress the existence of certain systems or determine they don't go very far.

When we were discussing this in our panel, several people brought up, in a properly functioning SMS, you don't need ASAP programs. That's absolutely true, but that's not the world we are in right now. There may be other things besides ASAP. ASAP was just the one when we were at American Airlines, they talked to us about it and they were very, very positive about the impact it has had on their SMS at American. It resonated with many of us on the panel and that's why it's in the report.

**Sen. Cantwell:** As a broadening of the communication?

**Dr. De Luis:** Right, exactly.

**Sen. Cantwell:** The key thing is to broaden -- you keep referring to this one instance, but I am assuming you are referring to some of the actions by people who may have tried to hide that information from the FAA. This committee also received whistleblower reports from people who made it clear that they had concerns. It's just we have to figure out this larger communication.

**Dr. De Luis:** Right, and it should not take a whistleblower report. A whistleblower report is a big deal for somebody to do. It is often a career-ending move. Whereas as the ASAP has been described to us you know, a mechanic can say, "I'm not sure if I put in the locking pins on the panel." He reports it. He will not be fired for making a mistake. The focus will be why didn't you? Is there a problem in the process?

The focus is first let's get the airplane down and make sure it is safe, then it is why did it happen? Is there a problem with the training and then make sure that never happens again. I think that is the attitude you need to encourage across the aviation world and in particular at Boeing.

**Sen. Cantwell:** Thank you.

### Third Round of Q&A

#### VIDEO

**Sen. Cantwell:** Thank you. Following up on that. We may have a couple more members coming, but if not, we'll conclude the hearing soon.

Dr. Meshkati, the report states that during the development of the 757 and 767, human factors in the flight deck operations “were the gold standard,” in part because “human factors specialists worked closely and collectively in Seattle.” Then the report goes on to say, “the role of human factors and its influence eroded through a series of administration issues, including reorganization, decentralization, downsizing, and relocation of the company's headquarters.”

What does that have to do with human factors?

**Dr. Meshkati:** Human factors works very good when you're very close to engineers and system designers. They exchange information, they've worked together, they work on the design of the system, and then they work on the training and that, and then they solve that problem together.

Again, I'm not in the business of promoting books, but chapter nine of this book [holds up book], which is about human factors, which I strongly recommend, that shows the way that the demise of the human factors or erosion of the human factors. One of them, for example, is chronicled in the book, is when the simulator trainings and that was totally moved away from the design and that, from Seattle to Florida or somewhere else. That is when you see a problem.

**Sen. Cantwell:** I think that was just the training, though, right?

**Dr. Meshkati:** The training, but before that, also during the design. Because you get some of that input from the training, coming back to the design,

**Sen. Cantwell:** Oh I see. You think that doesn't exist in a holistic way?

**Dr. Meshkati:** Absolutely. Holistic and centralized way.

**Sen. Cantwell:** Ok. And that's all feedback. Holistic and central, ok.

**Dr. Meshkati:** Thank you, Senator.

**Sen. Cantwell:** I wanted to ask about this in regards to the FAA. So, most of the report is focused on what you can do to make sure that you have a strong safety culture within the organization, and how much that has to be backed up by the FAA.

What does the FAA need to do to have its own safety system, improvements to make sure that it is thinking about human factors, or across the board a variety of issues that can enhance security, particularly at a time of changing technology. How do we get an FAA who is as up to speed. [UNINTELLIGIBLE] said, let's have this group that is at the beginning of the certification process, kind of detail out more of the risk factors so that that discussion could happen.

**Dr. De Luis:** You know, we focused a lot about, especially since January 5, on the need to put more FAA boots on the ground in the factory. And I am by no means saying that's a bad idea. That's an excellent idea.

But what you point out about the technology is why I think that ODA, or DER, or delegation of some sort is here with us forever, because the FAA does not have the resources to be able to be the world's experts on these technologies. That's not what they're there for, the world's experts reside at Boeing or whatever.

The key thing, I think, is that the FAA has to have the ability to interface with the world's experts. And that's a different set of skills, that's needed, you're not going to be conducting the cutting edge research, but you should be able to talk to the people that are developing that technology and be able to understand it, and in particular, understand how it impacts the safety and the operation of the aircraft.

I keep going back to something that was said earlier, about the need for the FAA to really step up its own SMS. I think that that's critical. If you have that, then you have a chance of being able to appropriately interface with the people you're supposed to regulate. If you don't have that, you're sort of, you know, spectators at the at the party here. And I think that they should be encouraged, or directed, or whatever it is, however it is that you do it to move in that direction.

**Sen. Cantwell:** Thank you.

## Fourth Round of Q&A

### VIDEO

**Sen. Cantwell:** Thank you so much. And just to clarify, again, one more time on this issue, because it's related to what he said, and what Senator Schmitt said. And I want to emphasize we all represent big aviation states, we want this to be right and we definitely believe in the workforce that we have in our states. We want them to continue to grow in expertise and excellence.

So, recommendation 30 and 31 of your report says "foster an effective safety culture and publish a roadmap for workforce development with engineers and inspectors." And oversee SMS for design and manufacturing organizations and partner with industry to measure the success of SMS and design an organization jointly reviewing these measures of success on a regular basis.

Okay, those are two key recommendations about SMS. So, the FAA is now in this rulemaking that is going to come out in the next 90 days. And so, what specifically do you want to see in that rulemaking that will help guarantee this success? And then secondly, what do we do about this problem that Dr. De Luis suggests which is - listen, it's a whole of government issue. If you ask me because we could ask Dr. Dillinger about space in general, but we're trying to keep the government at pace with technological change.

So, you're saying the FAA may not have some of these people and so what do we need to do? Because obviously, we do want to listen to what these sectors say. And they have input, they really have some of the smartest people about this technology, but we also have to get our oversight correct.

So how do we make sure the FAA rulemaking has what we want to see in it? And how do we deal with this lack of engineering, if you will, skill set at the FAA? Not at the company. At the company I think it exists, I think we're just not listening closely enough.

**Dr. De Luis:** I think, if I may, I think the to answer your first question unfortunately, SMS isn't new, right? It's been around in the aviation world now for 30 years.

**Sen. Cantwell:** But it was voluntarily implemented as part of a 2015 Consent Decree instead of being a real mandatory SMS. So, I'm hoping the FAA gets this right this time.

**Dr. De Luis:** Right, what I meant is that it's been in the aviation industry for 30 years, not at Boeing, you're absolutely correct. So fortunately, I mean, in a sense, all the FAA has to do is look at what it's done successfully with organizations like the airlines and others and apply those same standards and the same rules to Boeing. So, it's not a blank sheet of paper, is what I'm saying. They've got something to draw from.

With regards to your other question, I've always been a strong advocate of government agencies, like the FAA, drawing on the resources of the National Academies. I mean, I see when new technology enters a field, such as let's say, for example, AI, because that's the one that's the new technology du jour right now.

I've always been an advocate that you have these National Academies right down the street here with members that you can draw upon to basically go in and advise and give the people that know a lot more about these subjects than any of us. And I don't if some organizations do it more than others. But I think that that's a resource that FAA, and NASA, and other agencies don't use enough in my opinion.

**Dr. Meshkati:** The National Academy, I have just one good news, Dr. De Luis, FAA has gone to National Academy, and National Academy has created a panel of, they call it Community of Experts for Risk Analysis of Transport Aircraft.

And that one, I have the privilege of being a member, we meet over Zoom weekly, and I think it has been great because FAA has reached out to the nuclear power industry, for that community of experts. How do they do PRA, probabilistic assessment? They do that here.

Back to you, Senator Cantwell. I think that two recommendations that you brought up, 31 and 30, is fantastic. That's exactly, I think, in light of this State Safety Program, if these two can be combined together, I think that's going to be a paradigm shift for SMS.

**Sen. Cantwell:** Well, I think it's pretty simple to get a real SMS. And I think it's a great idea as we envisioned in ACSAA to get a panel of experts. So I'm glad to see that that is actually happening with the National Academies as it relates to this input.

We'll have to query the FAA more on exactly how broad that can go.

Dr. Dillinger, I'm going to leave the last question to you, because, you know, as painful as all this is, to me, we can get through it, and I think your referencing your work on the Space Shuttle Columbia, that was also a very painful moment for NASA, very painful moment for this committee. I sat on the oversight investigation of that, that the committee did, in joint session with other Senate committees.

But we did get through that. What do you think are the lessons learned here? How can we successfully move past to this, and on to the success that we want to see in aviation? Because I think the foundation is very strong, we have a great 100 years of aviation success, we want to build on it, as Dr. Luis said, we want to be known for the successes that the United States has had in aviation, and I think the elements are there. But what is it that we need to do to learn from what Columbia learned on how to move forward?

**Dr. Dillinger:** Thank you, Senator. That has been my life for decades.

I think what we learned from Columbia that's applicable here, and was applicable to the report, is how important people are, and the relationships between people. That's what the safety culture issues all address. It's about trust, it's about communication, It's about being there. And having a workforce that comes in that is prepared, that's trained, that's energetic, that's curious, that's dedicated, that will work their heart out, an organization can recover from a catastrophic loss when that's happened, by pulling all of those

resources together, and focusing on, then, the mission, and how everybody works towards the mission to make that happen.

But to do that, all of those parts, including the processes, have to come together with safety as a priority, where people understand that it's just part of doing business.

Brian O'Connor, the former Chief of Safety for NASA, used to talk about, it's, safety isn't the mission, it's how we do the mission. And that's a critical lesson learned for us.

**Sen. Cantwell:** Thank you.