EXAMINING THE FEDERAL AVIATION ADMINISTRATION'S OVERSIGHT OF AIRCRAFT CERTIFICATION

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(III)
EXAMINING THE FEDERAL
AVIATION ADMINISTRATION'S OVERSIGHT OF
AIRCRAFT CERTIFICATION

WEDNESDAY, JUNE 17, 2020

The Committee met, pursuant to notice, at 10:01 a.m., in room SD–G50, Dirksen Senate Office Building, Hon. Roger Wicker, Chairman of the Committee, presiding.

Present: Senators Wicker [presiding], Thune, Blunt, Cruz, Fischer, Moran, Sullivan, Young, Scott, Cantwell, Klobuchar, Blumenthal, Schatz, Markey, Udall, Peters, Baldwin, Duckworth, and Rosen.

OPENING STATEMENT OF HON. ROGER WICKER,
U.S. SENATOR FROM MISSISSIPPI

The CHAIRMAN. Good morning. Today, the Committee convenes for a hearing on the Federal Aviation Administration’s Oversight of Aircraft Certification. I welcome our witnesses, FAA Administrator Stephen Dickson and Michael Stumo, father of Samya Rose Stumo who tragically died on Ethiopian Airlines flight 302, and thank them for participating. March 10 marked the 1-year anniversary of the crash of Ethiopian Airlines flight 302, which was preceded by the loss of Lion Air flight 610. The aircraft involved in both accidents was the Boeing 737 MAX. Our deepest sympathies continue to go out to the families of those loved ones who are among the 346 souls lost in these crashes.

Since the Ethiopian Airlines crash, the Committee has heard from many whistleblowers at the FAA, at Boeing, and in the aviation industry. It is increasingly clear from our investigation that the FAA has a number of serious problems to address. My investigations staff has interviewed dozens of witnesses, reviewed many thousands of documents and e-mails, and been diligent in pursuit of these facts, no matter where they lead. However, I must express my profound frustration with the agency’s lack of responsiveness to most of my requests, dating back to last April, for documents that stem from whistleblower disclosures.

On April 2, 2019, I sent then Acting Administrator Daniel Elwell a letter requesting information about training and certification of the FAA Aviation Safety Inspectors. Following the FAA’s responses to my initial request, I sent a follow up letter on July 31, 2019, to Acting Administrator Elwell requesting additional information on
65 specific items. These 65 specific items included such serious matters as allegations of whistleblower retaliation by senior FAA managers. Nearly one year later, we have received complete responses for about 10 percent of those items and partial responses for another 30 percent. We have not received any response to over half of these requests.

Given the subject matter of today’s hearing, 12—I would note that 12 of the requests that FAA has not responded to pertain directly to the 737 MAX certification, directly to today’s subject matter. On August 1, 2019, committee staff asked the Department of Transportation, DOT, counsel to identify which item of the requests each production was responsive to, and whether the production represented a complete response.

This request has been reiterated several times but has not been consistently followed by DOT. The committee has made every effort to aid in document production. Back in September 2019, the Committee staff sent the FAA a prioritized list of 10 of the most significant requests, 10. Two of these 10 items were emphasized again on December 18, 2019. Over the course of 9 months, we have received completed responses to 2 prioritized requests, partial responses to 6, and no response at all to 2 of the top 10 items. In one case, staff requested e-mails between two FAA employees during a short period of time. The agency provided a response but it did not include a specific e-mail we were pursuing. Additional narrowing to a specific date by staff was required to produce the specific e-mail sought.

The FAA has still not produced the additional e-mails between these employees that I requested on July 31, 2019. Today is June 17. We have not received any documents since April 27 of this year. The lack of timely and complete responses to our document requests forced the Committee staff to seek FAA staff interviews beginning in October 2019. The DOT response and handling of the interview requests has been very slow.

In 7 months, our investigations team has been able to interview only four FAA staff members of the 21 we have requested to interview. And then came the virus. Recognizing the COVID–19 impact, on April 6, 2020, committee staff requested to move forward with brief written interrogatories of multiple FAA employees to expedite gathering relevant information with minimal impact on involved parties. DOT staff did not provide a definitive answer on the feasibility of written interrogatories until April 30, almost a month later, when they stated that in-person or virtual interviews were preferred. On May 5, as a result of DOT rejecting the interrogatory approach, the Committee staff requested to interview the next FAA employee.

On May 11, DOT staff stated that they were working to make the next interviewee available—that was May 5. As of today, June 17, 2020, committee staff have not heard back on when this interview can take place. Administrator Dickson, in our telephone conversation last Thursday, I raised a number of these matters and spoke of our entire frustration generally. You promised me that your team would work with my staff quickly to get back on track. I am extremely disappointed that we have not made significant progress since that phone call.
My staff followed up immediately after our call to set up a meeting with the staff member you identified. That request was acknowledged, but no attempt was made to set up the meeting. Last Friday evening, my staff reiterated our meeting request and provided a comprehensive list of all outstanding document and interview requests. My team asked to schedule a call on Monday, which was denied, but your team offered to meet this Thursday, tomorrow, one day after this hearing. The entire purpose, or the large purpose, of the meeting was to get answers before this hearing, not wait until after its conclusion. It is my understanding that our teams did speak last night after my staff insisted on the timely nature of the call, but no progress was made on resolving the multitude of outstanding issues.

This record of delay and non-responsiveness clearly shows at best an unwillingness to cooperate in Congressional oversight. It is hard not to conclude your team at the FAA has deliberately attempted to keep us in the dark, and by that I mean our investigations staff, our committee, and me. It is hard not to characterize our relationship during this entire process as being adversarial on the part of the FAA.

Administrator Dickson, I hold you responsible for this as the head of the agency. During your confirmation hearing, I asked you this question as we ask all nominees, “If confirmed, will you pledge to work collaboratively with this committee and provide thorough and timely responses?” You answered, yes, as we require all nominees to do. The lack of cooperation by your agency calls into question the commitment behind that pledge. We are not embarking on a fishing expedition. Our requests for documents and interviews have been very specific in content and reasonable in scope.

I can only assume that the agency’s stonewalling of my investigation suggests discomfort for what might ultimately be revealed. I expect to receive an explanation today at this hearing for the failure to comply with the Committee’s requests. As I mentioned, part of the Committee’s investigation involves the 737 MAX. Following the Ethiopian Airlines crash, the FAA grounded the fleet of 737 MAX airplanes.

Over a year later, the plane has still not been cleared to return to passenger service. The FAA, Boeing, and international regulators involved in the recertification process should take whatever time is needed to get the recertification right. As the recertification continues, a number of reviews, including this committee’s investigation, have raised concerns about how the MAX was designed and certified, how pilots were trained, and the nature of the relationship between the FAA and Boeing. The FAA needs to hold accountable anyone at the agency or at Boeing who broke the rules or fell short of meeting expectations.

Last October, this committee was the first on Capitol Hill to convene an oversight hearing with Boeing leadership. Today, we will hear from Administrator Dickson on what happened during the original certification process, the steps that the agency is taking to return the MAX to safe flight, and how the agency can help prevent future tragedies. The MAX recertification is a critical component of rebuilding public and international trust in the FAA. Before the MAX crashes, the FAA was the unquestioned gold standard
with regard to aviation safety. Congress has an important role to play in helping restore the confidence in the agency.

As a result of the Committee’s investigations, and findings from the National Transportation Safety Board, from the Joint Authorities Technical Review, and from the Department of Transportation, Ranking Member Cantwell and I have worked hard together and have introduced legislation, the Aircraft Safety and Certification Reform Act, to improve aviation safety. Our legislation creates a new requirement for manufacturers to prioritize safety, it reforms the Organization Designation Authorization or ODA system, creates a new emphasis on understanding how pilots interact with modern aircraft and other human factors, enhances protection for whistleblowers, and bolsters Congressional oversight.

This Monday, a day before yesterday, the Ranking Member’s staff requested that Mr. Stumo be allowed to testify. In spite of the lateness of this request, we were able to accommodate such a request by adding a second panel for Mr. Stumo. I look forward to a detailed discussion of the FAA’s aircraft certification process and how it can be improved so that these tragedies do not happen.

I also expect an explanation of the agency’s unwillingness to respond to this Committee’s requests for information. I now recognize my friend and colleague and Ranking Member, Senator Cantwell, for her opening statement.

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator Cantwell. Thank you, Chairman Wicker, and thank you for your statement. I want to say that as Ranking Member on our side of the aisle, we stand with you for any information requests and efforts to get the FAA to comply with what the majority has been requesting, so thank you for that statement. I want to take a moment to recognize the families who have lost loved ones in the Ethiopian Airlines and Lion Air tragedies. I can’t imagine the loss of life and the pain that you are still feeling. I appreciate your vigilance, just as I have appreciated the vigilance of the Colgan Air families who often attend our hearings and comment on safety measures before the Committee.

It can’t be easy to continue that role, but we thank you for doing it. All of the voices in these efforts to make our skies safer are important. I also look forward to hearing the testimony of Michael Stumo. We have to get this right, for his daughter and the 346 victims of those crashes. Today’s discussion is about leadership, about restoring America’s leadership in aviation safety. Safety is job one. It is job one in a critical sector that employs 2.5 million people, 150,000 in the State of Washington, but safety is job one because it involves so many lives.

The leadership task begins with the FAA, and you, Administrator Dickson. We look forward to hearing how your efforts to build the FAA’s oversight and capacity to improve safety in response to these two accidents have been undertaken. There have been numerous reports issued since the accidents, and unfortunately, the FAA response to a number of those investigations concerning the MAX seem more a rigid acceptance of the status quo than the needed changes that we want to see at the FAA. No mat-
ter what the structure of the FAA, it must be clear that it is an independent agency with oversight of certification. We need to have the best work force, which I believe we do in the Northwest, but we must have experts and investigators that are qualified and technically trained at the FAA to oversee, in a sufficient manner, the compliance process.

Now, there is a lot of discussion about Wall Street and the approach to aviation of value engineering. I am going to tell you something about the Northwest. The pride of the Northwest is about innovation and solid engineering, and solid engineering advancements. It is not about doing things on the quick, it is about doing things deliberately and getting safety right. And I want to see a certification process where we are listening to those engineers at the beginning of the process, who are calling out some of these safety issues.

The FAA management needs to be willing to back up those engineers on the ground who are calling out safety concerns at the earliest phases of the process, not at the end, and certainly not after certification. The FAA's system of delegation dates back to 1958—actually it can be traced back to 1927 when private doctors were used to conduct pilot health checks in the Aeronautics Branch of the Department of Commerce. However, it was the FAA's own action taking authority in the delegation of manufacturers for technical approvals that started in 2005 under the ODA system. Under this program, the industry engineers were acting on behalf of the FAA. These lines of oversight and communication were fragmented.

I believe, and I think the Chairman believes as well, we need a system of certification where hardworking engineers, and engineering safety, is driving the certification process, not the other way around. We can't have planes certified, and then after the certification, have them grounded because of unsafe features. A technical review by the international safety authorities, Joint Authority Technical Review, JATR, identified a number of problems with the ODA program and FAA oversight. Specifically, the need for a more holistic review and the fact that engineering expertise needed to have open communication systems and the technology level—the technical expertise level of those engineers needed to be there.

So Mr. Dickson, today I hope that we will hear about what the FAA believes needs to be reformed in this program. What reforms, of those suggested by Chairman Wicker and myself, do you support. I want to thank Chairman Wicker and his team, and my team, for working so collaboratively with us and their hard work in introducing this legislation that the Chairman just mentioned. I believe it does fundamentally change the way the FAA oversees the certification of large commercial aircrafts. Specifically, our bill, the Aircraft Safety and Certification Reform Act of 2020, will revamp the ODA and make sure that the FAA stays in the driver's seat of certification. Under our bill, the FAA will once again be responsible for directly appointing and approving the engineers who are tasked with carrying out the certification on behalf of the Administrator.

In addition, the FAA will assign safety advisors to closely monitor the performance of these designees, and we also create a new whistleblower protection to fortify the channels of communication.
and reporting safety. Critically, our bill will end any semblance of self-certification by repealing sections that would give the FAA additional authority for delegation under specific provisions. Our bill also requires implementation of the NTSB recommendations on safety automation and pilot response, as well as safety management systems for aircraft manufacturers. I believe these new standards would address the issues of multiple flight alerts, and the need for pilot training.

So I want to thank Senator Duckworth for her work with me on this legislation, the Aviation Automation and Human Factors Safety Act. The FAA must keep pace with the skills, and have the technical capacity to handle an increasingly complex aircraft technology. Automation has certainly helped safety, but the amount of automation and uncontrolled commands and alerts can be confusing, particularly when you only have seconds to respond. So understanding the interactions between human, technology, and operation environment is becoming more critical to safety in aviation.

That is why the bill with Chairman Wicker also establishes a Center of Excellence for flight automation and human factors and creates an office, the FAA office of continuing education and training, to make sure that those inspectors maintain and keep the expertise necessary to do the oversight that is required by the FAA. We also need science and technical advisors to address these developing new technologies.

With technology changing, building skills is important, and I want to thank Senator Moran for introducing the Foreign Civil Aviation Authority Assistance and Capacity-Building Act, which will increase global pilot standards and FAA's bilateral to improve pilot training. The United States needs to be loud and clear that we want to see strong airmanship. That is to say, a pilot needs to be able to fly the plane without the automation. And I hope that we, and you, will help lead that effort on an international basis. We also need a strong aviation workforce for the future, and that is why I have partnered with Senator Blunt with The National Air Grant Fellowship Program Act of 2020, which would create an aerospace policy fellowship, and leader for the future act.

It is clear the race for aviation around the globe is on. But we cannot have that race for competition drive us away from a solid safety and certification regime. The solution to that competition, I believe, is to hire and retain the best safety experts that we can find. So I look forward to hearing the ways in which you believe the FAA needs to improve the process.

Again, I want to thank Chairman Wicker for his leadership on the bill that we just introduced, and thank him for his focus on this issue. We do need to hold manufacturers accountable for compliance and safety standards through the process. I look forward to continuing to work with him on that. We need to have certain design features that we know are compliant with the airworthiness standard. No one wants to see a process where, at the end of the process, it is not clear that the data indicates actual compliance. I will have many questions about this.

So Mr. Dickson, today we are looking forward to the leadership that you will provide in addressing these issues. Safety has to be paramount, and the FAA has to be independent. So thank you for
being here, and I look forward to hearing from both our witnesses. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Cantwell. Administrator Dickson, I am sure you will want to respond to many of the statements made in my opening statement, but specifically just to reiterate, my investigative staff began this effort on July 31 of last year. And as I pointed out, we have received no response to over half of the items requested. Even after we narrowed down the scope of our requests significantly, there has been a lack of cooperation. So please explain to the Committee your position in this regard and then we will have follow-up questions also, sir.

STATEMENT OF HON. STEPHEN M. DICKSON, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION

Mr. DICKSON. Good morning, Mr. Chairman and Ranking Member Cantwell, and members of the Committee. Thank you for inviting me here——

The CHAIRMAN. Sir, you have an opening statement and feel free to summarize that in 5 minutes also. I neglected that step so——

Mr. DICKSON. Yes, sir.

The CHAIRMAN. Please proceed.

Mr. DICKSON. Thank you for inviting me here today to speak with you about the FAA’s oversight of aircraft certification and to provide you with an update on the 737 MAX. But first I want to assure the families of those who lost their lives in the Ethiopian Airlines and Lion Air accidents that you and your loved ones are foremost in our thoughts.

I think of you every day, and it is good to see Michael and Nadia and the other family members with us this morning. The lessons learned from these accidents will lead to increased safety worldwide. Our pledge is not only in words, but in the implementation of tangible and lasting improvements that will result, in part, from the observations and recommendations we have received from many review bodies including this committee.

Now before I turn to the focus of the hearing, I would like to take a moment to address some of the challenges the aviation industry has faced during the ongoing public health emergency. Aviation employees have worked diligently these past months, despite the risk to themselves, to safely transport passengers and much needed supplies.

Now the traveler demand is beginning to return, the FAA fully supports and strongly encourages the industry’s adoption of precautions to protect employee and passenger health. The Centers for Disease Control and Prevention as well as international public health agencies advised that face coverings are especially important in situations where social distancing is not feasible. Secretary Chao and the Department of Transportation have been clear that air passengers should wear face coverings to protect themselves and those around them, and that we expect the traveling public to follow aircrew directions and Airline public health policies.

As we move through the phases of reopening, we will continue to apply our aviation expertise to help lead efforts with other Federal agencies industry and our international partners to address public health risk in the air transportation system. Now with re-
spect to aircraft certification and our evaluation of the 737 MAX for return to service, the FAA continues to follow a thorough process guided by a data-driven, methodical review of Boeing’s proposed modifications.

In the U.S., our return to service decision will rest solely on the FAA’s analysis of Boeing’s work in these areas. At the same time, we will continue to provide assistance and work closely with our international counterparts as they make their own evaluations. Ultimately when the aircraft resumes passenger flights, it will be because safety issues have been addressed and because pilots around the world have received the training that they need to safely operate the aircraft.

Before that happens, the FAA must conduct a certification flight test and complete a pilot training assessment by the Joint Operations Evaluation Board or JOEB, which includes the FAA as well as our international partners and lined pilots from U.S. and foreign air carriers. Once that assessment is complete, the FAA’s Boeing 737 Flight Standardization Board will issue a public report addressing the JOEB’s findings.

Additionally, the FAA and the Multi-Agency Technical Advisory Board will review all final design documentation. The last steps for the FAA to approve each U.S. carriers’ updated pilot training program, issue a continued airworthiness notification to the international community, and publish an airworthiness directive of advising operators of required corrective actions. As I have said many times, I will not sign off on this aircraft until all FAA technical reviews are complete. I also intend to pilot the aircraft myself before the FAA makes any ungrounding decision.

Now, beyond the MAX, our commitment to improve the margin of safety for the aviation industry globally will start with aircraft certification but will ultimately be much broader. The FAA recently provided the Committee with its action plan in response to the recommendations of the secretary special committee to review the FAA’s aircraft certification process. The plan describes the FAA’s actions, both planned and underway, to address not only the recommendations from the special committee, but also the Joint Authorities Technical Review, the NTSB, the Indonesian National Transportation Safety Committee, and the FAA’s own findings.

Now beyond certification, the FAA is tackling interconnected aviation safety issues not only in the United States but internationally as well. We are prepared to take the lead in this new phase of worldwide safety. For example, we presented a working paper at ICAO last year on pilot training and automation dependency. This material was recently added into an ICAO proposal in the formation of a personnel training and licensing panel.

Our action plan focuses on 10 areas for global aviation safety, including safety management systems, data, and innovation, and we have aligned our RFIs 2021 budget request to support this activity. We are asking to recruit additional specialized employees such as human factors experts and software engineers, and will invest additional money to bolster improvements to successful information sharing programs such as ASIAS.

I have said many times that safety is a journey not a destination. We must never allow ourselves to become complacent. Always we
must keep in mind the passengers and their loved ones for whom we work. This concludes my statement and I will be glad to answer your question, Mr. Chairman.

[The prepared statement of Mr. Dickson follows:]

**PREPARED STATEMENT OF HON. STEPHEN M. DICKSON, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION**

Chairman Wicker, Ranking Member Cantwell, and Members of the Committee:

Thank you for inviting me here today to speak with you about the Federal Aviation Administration’s (FAA) oversight of aircraft certification and to provide you with an update concerning the Boeing 737 MAX. At the outset, on behalf of the United States Department of Transportation and everyone at the FAA, I would like to acknowledge, as we have before, the families of the victims of the Ethiopian Airlines and Lion Air accidents and extend, once again, our continued deepest sympathies and condolences to them. These tragic accidents should not have happened, and thus underscore and reaffirm the seriousness with which we approach aviation safety every day. We want the families, and the world, to know that we continue to work tirelessly to see that the lessons learned from these accidents will result in a higher margin of safety for the aviation industry globally.

Before I continue to the focus of this hearing, I want to digress for a moment to address some of the challenges the aviation industry has faced during the ongoing public health emergency. Aviation employees have worked diligently these past months—despite the risks to themselves—to safely transport supplies and passengers at a time when our Nation has needed them.

Secretary Chao and the Department of Transportation have been clear that passengers should wear face coverings while traveling by air, for their own protection and the protection of those around them. Face coverings are especially important in situations where social distancing is not feasible. This comes as a health guideline from the agency responsible for public health, the CDC.

Of course, across the transportation system every mode is different. But when it comes to air travel, the DOT and the FAA expect the traveling public to follow airline crew directions and policies, which are in place for passenger protection and the health of air crews, and to take very seriously the precautions recommended by the CDC and the International Civil Aviation Organization (ICAO). As we move through the phases of reopening, the FAA will continue to support airlines and their frontline employees as they implement these CDC guidelines. And we will continue to apply our aviation expertise to help lead efforts with other Federal agencies, with industry, and with our international partners to address public health risk in the air transportation system, both internationally and here in the United States.

I would also like to add that despite the public health challenges associated with COVID-19, our commitment to aviation safety has never wavered and our air transportation system remains safe, resilient, and flexible, thanks to the sustained focus and hard work of aviation professionals in the FAA and industry.

**Status of the 737 MAX Return-to-Service**

Safety is the core of the FAA’s mission and is our first priority. We are working diligently so that accidents like the ones that occurred in Indonesia and Ethiopia—resulting in the tragic loss of 346 lives—do not occur again. The FAA continues to follow a thorough process for returning the 737 MAX to service. As we have stated many times in the past, this process is not guided by a calendar or schedule. Safety is the driving consideration. I unequivocally support the dedicated professionals of the FAA in continuing to adhere to a data-driven, methodical analysis, review, and validation of the modified flight control systems and pilot training required to safely return the 737 MAX to commercial service. I have directed FAA employees to take the time needed to do that work.

With respect to our international partners, the FAA clearly understands its responsibilities as the aviation safety regulator for the State of Design for the 737 MAX. Last fall, we met with more than 50 foreign civil aviation officials, all of whom have provided input to the FAA. We have continued to have regular dialogue with them during the COVID–19 public health emergency. Each respective nation will make its own decision for clearing the 737 MAX for flight, however, we are also conducting and planning additional outreach activities to engage with our international partners, including providing support on return-to-service issues; maintaining transparency through communication and information sharing; and scheduling meetings for technical discussions.
As I have stated before, the FAA's return-to-service decision on the 737 MAX will rest solely on the FAA’s analysis of the data to determine whether Boeing’s proposed software updates and pilot training address the known issues for grounding the aircraft. The FAA fully controls the approval process for the flight control systems and is not delegating anything to Boeing. The FAA will even retain authority to issue airworthiness certificates and export certificates of airworthiness for all new 737 MAX airplanes manufactured since the grounding. When the 737 MAX is returned to service, it will be because the safety issues have been addressed and pilots have received all of the training they need to safely operate the aircraft.

Actions that must still take place before the aircraft will return to service include a certification flight test and completion of work by the Joint Operations Evaluation Board (JOEB), which includes the FAA and our international partners from Canada, Europe, and Brazil. The JOEB will evaluate pilot training needs using line pilots of various experience levels from both U.S. carriers as well as international carriers. The FAA’s Flight Standardization Board for the Boeing 737 will issue a report addressing the findings of the JOEB, and the report will be made available for public review and comment. Additionally, the FAA will review all final design documentation, which also will be reviewed by the multi-agency Technical Advisory Board (TAB), made up of FAA Chief Scientists and experts from the U.S. Air Force, NASA, and Volpe National Transportation Systems Center.

The FAA will issue a Continued Airworthiness Notification to the International Community providing notice of pending significant safety actions and will publish an Airworthiness Directive advising operators of required corrective actions. I will not sign off on the aircraft until all FAA technical reviews are complete, I fly it myself using my experience as an Air Force and commercial pilot, and I am satisfied that I would put my own family on it without a second thought.

**Oversight of Aircraft Certification**

Safety is a journey, not a destination—a journey we undertake each and every day with humility. Today’s unprecedented U.S. safety record was built on the willingness of aviation professionals to embrace hard lessons and to proactively seek continuous improvement. The FAA both welcomes and recognizes the importance of scrutiny of our processes and procedures. In addition to this Committee’s work and other congressional reviews, several independent reviews have been initiated to look at different aspects of the 737 MAX certification and the FAA’s certification and delegation processes generally.

The unprecedented Joint Authorities Technical Review (JATR), commissioned by the FAA, was the first review to be completed and entailed the participation of nine other civil aviation authorities joining the FAA to conduct a comprehensive assessment of the certification of the automated flight control system on the 737 MAX. The JATR was chaired by former National Transportation Safety Board (NTSB) Chairman Christopher Hart and was comprised of a team of experts from the FAA, the National Aeronautics and Space Administration (NASA), and the aviation authorities of Australia, Brazil, Canada, China, the European Union, Indonesia, Japan, Singapore, and the United Arab Emirates. Never before have 10 authorities come together to conduct this type of review. The JATR provided its unvarnished and independent review and we appreciated their recommendations when they were released this past fall.

The FAA has also received recommendations from the NTSB and the Indonesian National Transportation Safety Committee’s (KNKT) accident report on Lion Air Flight 610. Earlier this year, the Ethiopian Civil Aviation Authority released an interim accident report on Ethiopian Airlines Flight 302, with recommendations. Further, the Secretary of Transportation’s Special Committee to Review the FAA’s Aircraft Certification Process released its recommendations in January of this year. The Special Committee was established to advise and provide recommendations to the Department on policy-level topics related to aircraft certification.

The FAA recently shared with Congress its Action Plan in response to the recommendations of the Special Committee. The plan discusses in depth the FAA’s actions, both planned and underway, to address the recommendations. Importantly, the FAA developed its plan not solely in response to the Special Committee recommendations, but also in the context of the other recommendations received from the JATR, NTSB, and KNKT, as well as FAA’s own findings. The actions described in the FAA’s Action Plan are responsive to all recommendations received and apply to the entirety of the FAA’s approach to aircraft certification. The plan reflects the FAA’s commitment to improving our certification process domestically, and to improving aviation safety globally. We believe that transparency, open and honest communication, and our willingness to improve our systems and processes are the
keys to restoring public trust in the FAA and in the safety of the 737 MAX when it is returned to service.

Moving Forward

Beyond the 737 MAX, the FAA is committed to addressing issues regarding aircraft certification processes and aviation safety generally, not only in the United States, but internationally as well. Over the years, the FAA has exercised a leadership role in the promotion and development of global aviation safety. We have helped raise the bar on safety standards and practices worldwide working with the ICAO and other civil aviation authorities. We have an opportunity to do even more. We are committed to expanding our efforts with other authorities around the world and to fostering safety standards and policies at ICAO to help meet the public’s expectations of the highest possible levels of safety globally, even in areas the FAA does not regulate directly. Without safety as a foundation, we cannot have a vibrant aviation industry in any country, much less between countries. Our international air transportation network is a tightly woven fabric that is dependent on all of us making safety our core value. To that end, at the 40th Session of the ICAO Assembly the U.S. presented a working paper, Pilot Training Improvements to Address Automation Dependency, with several of our international partners. The paper was accepted and in May of this year we were able to get it included in an ICAO proposal on the establishment of a Personnel Training and Licensing Panel which will be considered in July.

In our continuing efforts to raise the bar for aviation safety across the globe, it will be important for the FAA and our international partners to foster improvements in standards and approaches not just for how aircraft are designed and produced, but also how they are maintained and operated. We at the FAA are prepared to take the lead in this new phase of system safety. As noted in our Action Plan responding to the recommendations of the Special Committee our actions will address specific areas of focus including, safety management systems, system safety, globalization, data, internal coordination between certification and flight standards teams, personnel, delegation, amended type certificates, innovation, and existing recommendations. Our strategy to implement these action items will coalesce around several major themes discussed briefly below.

Holistic Approach

In the context of aircraft certification, a holistic approach means that an aircraft system includes the aircraft itself with all of its subsystems, including the flight crew. The aircraft is not a collection of parts or systems, but should be viewed as a whole. A holistic approach to aircraft certification would not rely upon item-by-item reviews in isolation, but would take into account the interactions and interdependencies between all systems and the crew. Such an approach would link all safety requirements for type certification to other aspects of safe operation including, for example, pilot training and operational performance.

Human Factors

Human factors considerations are an important part of the machine design process, which will need to take into account safety and performance levels of human users. As aircraft systems become more complex and the level of automation increases, the integration of human factors into the design of aircraft will be increasingly important. Human factors considerations must include trained and qualified personnel who will be responsible for operating and maintaining these increasingly safe and complex aircraft.

Workforce of the Future

In order to meet the safety needs of a rapidly evolving aerospace system, the FAA will need to recruit, hire, maintain, and retain a workforce with the necessary technical expertise, capabilities, and adaptability. Our efforts must ensure that we are able to hire and retain the right people with the right skills and mindset, engaged at the right time, with systemic coordination between certification and operational suitability.

Information and Coordinated Data Flow

Ensuring a coordinated and flexible flow of information during any oversight process is critical. In the context of aviation safety, the concept of sharing information cuts across many initiatives that the FAA continues to examine for potential expansion. These include the following important categories, all of which are part of the broader information and data flow theme:

1. Safety Management Systems. Safety Management Systems (SMS) establish a commitment, in this case on the part of the manufacturer, to continually im-
proving safety. SMS identifies and manages risk and provides safety assurance by continually evaluating risk controls and by creating a positive safety culture within a workforce. Integrating a safety management system into the processes for design and production, as well as operations, enables insight into the connections and interrelationship between systems.

2. **Big Data.** The FAA must continue leaning into our role as a data-driven, risk-based, decision-making oversight organization that prioritizes safety above all else. We do that by breaking down silos between organizations and implementing programs like SMS supported by compliance programs and informed by data. We look at the aviation ecosystem as a whole, including how all the parts interact: aircraft, weather, pilots, engineers, flight attendants, technicians, mechanics, dispatchers, air traffic controllers, safety inspectors, training programs, certification, passengers—everyone and everything in the operating environment. This includes building upon the successes we have had collaborating with industry and implementing voluntary safety information sharing programs. In the broader context of the overall importance of data to a safety regulator such as the FAA, we are examining the data we have, identifying data we may need, and looking for new methods to analyze and integrate data to increase safety.

3. **Just Culture.** In addition to the technical work required for truly integrated data, a key enabler of a data-driven safety organization is a healthy and robust reporting culture. A good safety culture produces the data needed to understand what’s actually happening. If we know about safety concerns and we know where threats are coming from and how errors are occurring, we can mitigate the risks and fix the processes that led to these errors. A good safety culture demands that we infuse that safety data into all of our processes from top to bottom—in a continuous loop. To be successful, a safety organization relies on a Just Culture that places great value on front-line employees and empowers those involved in the operation to raise and report safety concerns in a timely, systematic way, without fearing retaliation. A Just Culture starts at the top. It’s something leadership has to nurture, encourage, and support everywhere in the organization. Employees have to see the results, see what the data is showing, and see how the organization is using analytic tools to identify concerns and errors and put actions in place to mitigate them. Employees and organizations need to see results that come from leveraging safety data and technical expertise into a safer operation.

**Initial Action**

As we move ahead to implement these strategies, we have developed a budget request to address specific related needs. For example, the FY 2021 President’s Budget requests funding to recruit additional specialized skilled employees, such as more human factors experts and software engineers. The request would also fund a new system that tracks employee training, qualifications, and certifications to ensure our aviation safety workforce has the skills and knowledge required to execute our oversight functions. This action addresses some of the findings of this committee’s investigatory work that has assisted in pointing out inconsistencies with our tracking systems.

Consistent with Congressional direction, the budget request will support our new office to oversee Organization Designation Authorization (ODA). While the ODA program has been in place since 2005, the creation of a single office supports standardized outcomes and improvements across the ODA program. Further, the budget request will support improvements to voluntary information sharing programs such as Aviation Safety Information Analysis and Sharing (ASIAS) and the Aviation Safety Reporting Program. These programs are critical tools in the FAA’s toolbox, facilitating the collection of safety data that allows the FAA to identify trends and improve upon aviation safety. Each of these requests provide a snapshot of our concerted effort to continually improve aviation safety.

**Conclusion**

Aviation’s hard lessons and the hard work in response to those lessons—from both government and industry—have paved the way to creating a global aviation system with an enviable safety record. But as I mentioned earlier, safety is a journey, not a destination. We have achieved unprecedented levels of safety in the United States. Yet what we have done in the past and what we are doing now is not good enough for the future in an increasingly complex and interconnected world. We must build on the lessons learned, and we must never allow ourselves to become complacent. The United States has been, and will continue to be, the global leader in aviation safety. We are confident that continuing to approach this task with a spirit of hu-
mility, openness, hard work, and transparency will bolster aviation safety world-
wide.

This concludes my statement. I will be glad to answer your questions.

The CHAIRMAN. Thank you very much, Mr. Administrator. Well, let’s go ahead then. I sort of jumped the gun a few moments ago. Senator Cantwell and I normally reserve our opening remarks to 5 minutes. This is—the tone of my remarks today I think people would recognize is not really our style. But I hope you understand, Mr. Administrator, the very serious way that I see the lack of re-

And so I will certainly give you an opportunity to respond to my complaints in my opening statement and to the ones I have men-
tioned to you personally over the phone again. Again, my investiga-
tive team began their work July 31 and have received no response to over half of the items in the request. Do you view this as accept-
able and can you explain to the Committee what has happened in the FAA in this regard?

Mr. DICKSON. Thank you, Mr. Chairman. I always appreciate the opportunity for dialogue. As you mentioned our conversation last Thursday and our oversight team had connected with your staff last night. And I believe that will put us in a position to make progress. As I have said many times, I am totally committed to the oversight process. I realize that it is an important matter for you. You have made that clear. You have made it doubly clear this morning, and I appreciate that.

I also want you to know that it is very important to the agency and it is a responsibility I take very seriously. In my—I believe it’s inaccurate to portray the agency as unresponsive. We have pro-
vided responses in the seven major subject areas in the July re-
quest. There is still ongoing work and I would just point out that we have a number of investigations underway that were already supporting the OIG, the OSC, the NTSB, and others, and some of the information requests have to—implicate matters within those investigations and we certainly don’t want to prejudice the outcome of those.

However, you know, we are going to redouble our efforts. You know, I hear your frustration and that is not OK with me. That is not where we want to be. I am trying to promote a culture both within the agency and really with all of our stakeholders of trans-

The CHAIRMAN. Well, I would reiterate that the climate in your agency with regard to the requests for information and documents from this committee and from our staff has been most unsatisfac-
tory. For example, we asked for copies of e-mails between two par-
ties and were asked to make that more specific. And then when we pinpoint the very day and time of the e-mail, the response from employees at FAA has been a reluctance to supply that to us.

Now, we have an important responsibility to the taxpayers. This is part of our constitutional responsibility, to provide oversight. And to me, there is no excuse for that. Let me make this sugges-
tion to the you, Mr. Administrator. It would seem to me beneficial
if you could name one specific senior person under your supervision to be the contact with our staff directors on this matter. And that person would be responsible for making sure the agency provided satisfactory responses, be reportable to you, and my staff director would be reportable to me, and at least there would be a direct conduit of information and requests directly from this senior staff person to you the administrator. Would you be willing to agree to that procedure based on my frustration?

Mr. DICKSON. Mr. Chairman, we will set up a process to have more dynamic communication as you suggest.

The CHAIRMAN. Well, but I am making a specific—

Mr. DICKSON. I understand.

The CHAIRMAN.—suggestion to you and you are not willing to accept that at this point?

Mr. DICKSON. Mr. Chairman, we will agree to that.

The CHAIRMAN. OK, I appreciate it. Senator Cantwell.

Senator CANTWELL. Thank you, Mr. Chairman. Administrator Dickson, I would like to ask several questions just to get you on the record on changes that we would like to see at the FAA, both in the legislation we have proposed and things that we think continue to need to be addressed beyond this legislation. So if you could help me out with as much yes and no that would be so helpful. Should aircraft manufacturers be accountable for compliance of design data submitted to the FAA approval? Yes or no?

Mr. DICKSON. Yes.

Senator CANTWELL. OK. Do you believe that this accountabilities should exist throughout the certification process not just at the end of the certification process when safety concerns are harder to address and designs are tougher to rework and correct?

Mr. DICKSON. Without speaking to the specifics, I am not knowledgeable of some of the details that you are referring to but I believe that that the holistic approach that you referred to that a safety management system would provide would produce that result.

Senator CANTWELL. So the answer is yes, you think—

Mr. DICKSON. Yes.

Senator CANTWELL. OK. Applicants must certify that data design complies with airworthiness standards? That’s a good idea.

Mr. DICKSON. Yes.

Senator CANTWELL. OK. And if the FAA receives a report of non-compliance, the FAA should ensure that corrective action is taken prior to issuing a certificate? Yes?

Mr. DICKSON. Yes.

Senator CANTWELL. OK. And if non-compliance is discovered after an issuance of certificate, do you believe the manufacturer should be required to correct it for future production of aircraft?

Mr. DICKSON. That is in the continuing operational safety realm and that is what our directive process provides for. Yes.

Senator CANTWELL. OK. Well, certainly I have concerns that that is not what has taken place in the past and it is good to hear that that is what you think should take place now. I think the end result of aircraft certification process is, you know, the FAA approval of—you know, it is the approval of the type certificate, but we want to make sure that as we go through this process and one of the fail-
ures of the 737 MAX, which is just unacceptable, is that we need to make sure that that compliance and airworthiness requirements are met. So do you agree that the purpose of the aircraft certification is to achieve compliance?

Mr. DICKSON. Yes.

Senator CANTWELL. OK. And in order to achieve compliance FAA must validate the manufacturers design data is compliant with applicable airworthiness standards?

Mr. DICKSON. Yes, Senator, I would say just it is actually a higher bar than compliance. Compliance with individual rules does not necessarily produce a safe outcome and that is what we are trying to deal with.

Senator CANTWELL. Well, I agree that from the holistic perspective, but I am just trying to point out that the process that we have today between the beginning of the process on the type certificate and the final airworthiness approval certainly in the MAX situation didn't catch the problems and certainly had information—so that is why there is data in your questions and answers to that are so important and hopefully that will help us in moving forward on this legislation. If I could ask you now about the bill that Senator Wicker and I introduced. Do you agree that in order to raise the bar the FAA should be directly appointing these ODA members?

Mr. DICKSON. Senator, the—without commenting specifically on the bill, I think that we need to certainly take a systems approach, and you know, we need to have strong oversight of the ODA. We already approved——

Senator CANTWELL. Mr. Dickson, I am not as genteel as the Chairman who resides from a state where genteel approaches exist and are perfected. I am a little more blunt, OK, so I don't want to be stonewalled here. Do you believe the FAA should retain and appoint these individuals and oversee them in the process? Yes or no?

Mr. DICKSON. It is not something that—we certainly approve their qualifications and their background. The individual selection is not something that I believe would add to the safety of the process, but it is something that we are certainly anxious to work with the Committee on and see if there is a way that we can add that in.

Senator CANTWELL. Mr. Dickson, it is a little hard—just have to view you through the lens here because this gentleman—but this is the very point. We need an independent FAA. We need the lines of communication between these whistleblowers or whoever it is on the engineering, you know, the SPIA member who is on the ground who says, look this is a problem. He needs to be backed up by the FAA, but if you don't have a direct line to that employee, and you don't approve him in the final and you don't oversee his work and you don't have the right expertise at the FAA, then he is not going to be backed up by you.

Mr. DICKSON. Could not agree more.

Senator CANTWELL. OK. Thank you. Thank you, Mr. Chairman. The CHAIRMAN. Thank you, Senator Cantwell. Senator Blunt.
STATEMENT OF HON. ROY BLUNT, U.S. SENATOR FROM MISSOURI

Senator BLUNT. Thank you. Thank you, Chairman. On this topic of just being responsive. I am sure you know that this is really a concern to every member of the Committee and you have heard that clearly today. I hope that the process you and the Chairman have agreed to actually produces a different result, but often the request, Mr. Administrator, is not that hard to respond to and it is just agencies continue to create problems for themselves and difficulties for us by not just responding with information you have as opposed to analyzing whether you should respond with that to that request.

There is virtually never a question that eventually you are going to be required to respond or that you should respond or that the law requires you to respond or that when you testified along with many others at your confirmation hearing, you have agreed to always respond and always respond quickly. If that question is not asked at a confirmation hearing, it is an oversight. And you have heard some of that today.

I am not sure you and colleagues around this Department and many others can ever hear enough of that because it is a constant problem, almost always self-inflicted, by an agency's refusal to have somebody who will take responsibility. So maybe your agreement today to allow that to happen, really important.

I may go over a little of what Senator Cantwell has already asked about, but on the ODA office, do you think that the legislation that has been introduced by the Chairman and the Ranking Member for additional oversight mechanisms would benefit the process of how ODA personnel and procedures are approved?

Mr. DICKSON. Thank you for the question, Senator. And there are many elements of the proposed legislation that are exactly on point in terms of implementing systematic approaches and strong oversight and a data-driven process between the manufacturer and the FAA. So—and also strengthening the workforce aspects. What we really need is a systems approach and system thinking system engineers, human factors and individuals. And those additional resources would be very helpful.

Senator BLUNT. So in 2018, Senator Cantwell and I worked hard to get the 2018 FAA Act—all the members of this committee, but I chaired the subcommittee at the time and she was the leading Democrat on the Subcommittee that brought this legislation forward. Can you give me an update on how the implementation of the 2018 FAA Act as it relates to these programs has occurred, and has the FAA implementation created any changes—implemented any changes to its oversight of the ODAs since the 737 crashes?

Mr. DICKSON. Yes, Senator. The ODA office has been—was implemented within the last year, and we have set up the framework and the process to essentially oversee and audit of all 79 ODAs. And we have money in our budget request for the upcoming fiscal year to continue to develop and permanently staff that office.

And we will continue to do that. We have also recently selected a project manager who will be reporting to me quarterly on the execution around a lot of the issues that are in the proposed legislation, the Committee's version, that will hit a lot of the same
themes in terms of implementing the recommendations from the special committee report, the Joint Authorities Technical Review, and the NTSB recommendations.

Senator BLUNT. And you mentioned that on recertifying the plane we are talking about, that you would fly that yourself before it was recertified. What kind of special information or training would a skilled pilot like you need before he got in the cockpit of a plane that was in the process of being certified again?

Mr. DICKSON. Well Senator, I have got quite a bit of flying time on the 737 on previous versions, and I have been out too in my first month on the job. I went out to Seattle and have flown the various profiles. So I am very familiar with the system.

Also my Deputy, Dan Elwell, and I will be completing the same simulator training that the Joint Operations Evaluation Board Pilots will be going through, and then I will complete a flight profile on the aircraft as well. So we will have several days of preparation to get ready for that event.

Senator BLUNT. OK. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Blunt. Senator Klobuchar joins us remotely.

STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA

Senator KLOBUCHAR. Thank you. Thank you very much, Mr. Chairman, Senator Cantwell for holding this hearing. And Administrator Dickson, thank you for being here. And I especially want to acknowledge the families out there. I am so glad that I know Senator Cantwell worked to have Mr. Stumo be able to testify.

I am so sorry for your loss, Mr. Stumo, and I think your courage in coming forward for your daughter is going to make a difference not just for your family, but for so many other families out there. So I wanted to start, Mr. Dickson, these two tragic plane crashes as we know Boeing 737 MAX in Indonesia and Ethiopia took the lives of over 300 people, including by the way, one of my constituents, Mr. Hussein, St. Cloud, Minnesota. And at the Committee's hearing in October, I expressed concerns with the findings of a report from the Department of Transportation's Inspector General that found that the FAA conducted oversight of only 4 percent of Airline manufacturers, employees responsible for conducting the certification. The same report also found that one manufacturer approved about 95 percent of the certifications for its own aircraft.

So knowing that this delegation program contributed to the FAA's oversight failure for the 737 MAX certification, are you concerned about how widely the program is used for certifications and how little oversight there is? And I guess the second question would be, you know, you released the plans to improve the certification process, but it would not change the program by which the FAA delegates authorities or really address this undue pressure for manufacturers' issues. So, could you talk about where you are on this and what you think about my concerns about whether or not this is going to improve things enough. Thank you.

Mr. DICKSON. Thank you for your question, Senator. And I share your perspective on the families. And as I said, we owe it to them and to the public to do this right. With respect to the amount of
delegation, it depends on the—you know, delegation, the ODA process is based on trust and I would say it is a trust but verify system. And it is a privilege. It has to be earned. And early in a certification process there is typically only very routine items that are delegated.

There are four parts of the certification process in terms of establishing the certification basis, and actually the only part that is actually delegated is analysis and testing. And those are the items that you see as we see data as a process continues over a period typically of five to 7 years in most cases, that there may be an opportunity to delegate additional items in terms of certification analysis and testing only. The final decision remain——

Senator KLOBUCHAR [continuing]. But the undue pressure issue is what I am concerned about given what we saw with that internal serving at Boeing where one third of employees said they felt this pressure.

Mr. DICKSON. Well, I think that is an extremely important issue. We continue to investigate instances of undue pressure. But specifically this is why safety management systems are so important because the only way to address that culture issue is by increasing the ability for frontline folks, both within the agency frankly and within the manufacturer, to bring issues forward in real time. And one of the benefits of safety management systems is that it puts safety responsibility where it belongs at the highest levels of the manufacturer. It also promotes transparency.

Senator KLOBUCHAR. All right. OK, let’s move on, Mr. Dickson. I don’t see the timer here, but I am going to ask you just two more questions. In September, the NTSB noted in its report that the underlying assumptions Boeing made about how pilots would react under certain conditions were severely flawed, the assumptions were. And have you started looking at the approval of other aircraft, non-Boeing aircraft or other Boeing aircraft, based on the recommendations regarding these pilot assumptions because to me that was—anyone, even someone who is not a pilot, saw this as a problem.

Mr. DICKSON. It is a great question. Human factors issues and pilot performance and the pilot as integral to the design of the aircraft is something that we are reviewing very closely as part of not only the return to service of the MAX, but also our certification processes in general. It is a key pillar of our strategy.

Senator KLOBUCHAR. OK. Last, in January the special committee commissioned by Secretary Chao to review the crashes has recommended that the FAA should expand its efforts to improve international standards. This bill was already referenced with Senator Moran and Senator Capito, and of course, Senator Cantwell.

And I am one of the co-sponsors, the Foreign Civil Aviation Authority Assistance and Capacity Building Act, to help improve international pilot training. Do you agree that the FAA should work with our international partners to develop important international pilot training safety standards for the aviation workforce and industry? I think we all know as I know from my constituent dying in that crash that no one is immune. Our Americans are going to be on flights all over the world.
Mr. DICKSON. Yes, Senator, wholeheartedly agree and the ICAO effort that I talked about before is the activity that were already undertaking in this area and we look forward to continuing to engage both bilaterally and regionally on pilot training and qualification issues around the world.

The CHAIRMAN. Thank you, Senator Klobuchar. And I would note that technically our clock is supposed to be on the screen——

Senator KLOBUCHAR.—I will fix it. I will fix it.

The CHAIRMAN. OK. Next is Senator Fischer, also joining us remotely.

STATEMENT OF HON. DEB FISCHER,
U.S. SENATOR FROM NEBRASKA

Senator FISCHER. Thank you, Mr. Chairman. Administrator Dickson, welcome this morning. Good to have you here. The Joint Authorities Technical Review said that the FAA was not completely unaware of MCAS, but because the information and discussions about MCAS were so fragmented, were delivered to disconnect groups, it was difficult to recognize the impact and the implications of this system.

Last October, I asked then Boeing President and CEO Dennis Muilenburg about that fragmentation of communications between Boeing and FAA, which he responded that Boeing needed to make changes to improve communication with the agencies.

Do you agree that the communication between Boeing and FAA was—that it was fragmented to the point that relevant information was not provided to the agency? And if so, how will steps that you have outlined such as a safety management system and a "just culture" improve that communication?

Mr. DICKSON. Thank you for the question, Senator. A couple of points there. I agree that, and I think our views and the other reviews have shown that information was presented in a fragmented manner and it was difficult to follow the entire thread, and this was part of the major issue that we are dealing with. Within the agency, we have recently taken steps to have our pilots and our flight standards group involved earlier in the certification process throughout.

This is part of our effort to make sure that human factor considerations are taken into account and integrated into the design process. As you mentioned, safety management systems, as I mentioned a few minutes ago, are probably the biggest game changer in my experience in terms of turning a culture around and making it more transparent and focused again at the highest levels and throughout the organization on safety and quality.

And it also puts the agency in a much stronger position in terms of being able to oversee the entire certification process because it is less transactional. It is not, you know, a question-and-answer. It is actually a data feed where we are actually privy to the picture as the program progresses. So there is a lot that goes into that. Again, data is very important and communications are very important, but that will definitely put us in a much better place.

Senator FISCHER. And also, Mr. Dickson, we are seeing that aircraft are becoming more automated and that means that there is more systems that can affect the aircraft controls without any kind
of pilot input. During a hearing last year, DOT Inspector General testified that “reliance in automation is a growing concern among industry experts who have questioned whether pilots receive enough training and enough experience to maintain manual flying proficiency.” Do you share that concern about automation?

Mr. DICKSON. I do. And automation is a benefit and it has led—it has been part of the improvement in aviation safety that we have seen over the years, but the individual still has to be engaged with the machine.

And to the extent that we are over-reliant and we lose situational awareness flying the airplane, you still have to manage your flight path and you have to stay mentally engaged with the aircraft. So there is a balance and that is why integrating human factors and human capabilities into aircraft design has always been important but it is more important now and going into the future than it ever has been.

Senator FISCHER. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Fischer.

Senator Schatz.

STATEMENT OF HON. BRIAN SCHATZ,
U.S. SENATOR FROM HAWAII

Senator SCHATZ. Thank you, Mr. Chairman. Thank you for conducting this hearing. And Mr. Dickson, I wanted to change the topic a little bit from certification reform to flying safely during the pandemic. The International Civil Aviation Organization recently issued recommendations for travel during the pandemic, and I just want to get your views on those recommendations and what the FAA is going to do to integrate that into their process?

Mr. DICKSON. Well, thank you for the question, Senator Schatz. And actually those ICAO recommendations were the result of work that we did in the agency and brought forth to ICAO through the ICAO Council on Aviation Recovery Task Force.

And I selected my Deputy Administrator Dan Elwell to lead that effort, and he worked with the Council and with authorities around the world to bring those guidelines forward. We are working on a similar process within the U.S. Government and certainly involving the CDC and others to have a similar set of measures and guidelines promulgated for travel within the U.S. so that we are——

Senator SCHATZ. When you say measures and guidelines, do you mean rules or do you mean guidelines?

Mr. DICKSON. I mean guidelines. As the Secretary has said, these will not be regulatory mandates, but they will be very specific and we expect for air carriers and the public to follow those guidelines as well as airports. And we are working with the air carriers on this. We are using their safety management systems and the data that is coming out of those systems to monitor their——

Senator SCHATZ. Does this sound like a philosophical thing for you folks? I mean I really—I mean this sincerely, I just don’t get why you wouldn’t want this to be mandatory. I don’t understand why we are sort of going with a sort of private sector driven approach here or a voluntary approach or federalism approach.

Is this just a matter of your approach to what the Federal Government should do? It seems to me that when you are talking
about aviation, it is certainly Federal, and when you are talking about pandemic, it sort of falls into the category squarely of the kind—aviation safety. It is the kind of thing that you ought to make mandatory if you have come to certain conclusions about how to fly safely. So what gives here? How come you don’t want to make a rule?

Mr. Dickson. Well, I appreciate the question, Senator. I am coming at this and the agency comes at this from an aviation safety perspective. So there are many things, there is a lot of data that we have that we get from the commercial aviation carriers and we need to make sure that there is not an impact on aviation safety.

With respect to public health, that is the CDC and of course they have responsibilities for sectors of transportation and really the entire public health situation that goes well beyond aviation.

So we are acting as a facilitator in that process. But if there is a nexus for aviation safety, then we are concerned about that and that is what we are working with the carriers on and in the inter-agency process within the Government, to make sure that we have consistent guidelines out there.

Senator Schatz. OK, I got it. And I, you know, look we do we have a difference of opinion here. I think I, you know, I am hoping we will be able to get some bipartisan support for some person mandatory rules here, but I don’t want to chew up all my time. I want to ask two more quick questions. Is flying safe from the standpoint of coronavirus?

Mr. Dickson. Yes, I believe so with the—but again, we all have a role to play. We have to protect each other. And again, the air carriers and the airports and TSA and all stakeholders out there, the FAA’s air traffic organization, we have to make sure that we are operating the system safely and consistently and predictably.

Senator Schatz. Thank you. And one final question, on May 1, the D.C. Circuit ruled in the case of Hawaii Kalisch Coalition Malama Pono that the FAA must establish air tour management plans for all covered parks within two years. I am assuming that you will implement that as soon as possible and especially in those parks where this is an area of contention?

Mr. Dickson. Yes, Senator, we are—I am familiar with the ruling and I believe that we are working with the Park Service now and have a preliminary plan that will be presented on August 30.

The Chairman. Thank you, Senator.

Senator Schatz. Thank you very much.

The Chairman. Thank you, sir. Senator Moran.

STATEMENT OF HON. JERRY MORAN,
U.S. SENATOR FROM KANSAS

Senator Moran. Mr. Chairman, thank you, and Mr. Dickson, thank you for being here, and to the second panel, to the witness there, condolences from me and my colleagues in the Committee. We thank you for your presence here today to help us better understand the importance of the decisions that the FAA and the Congress may make in regard to Airline safety. We have come a long way in that regard but recognize it is a never-ending attempt to advance safety and I am pleased that you are here. I am sorry that you are here for the reason that you are.
Mr. Dickson, let me first indicate to the Chairman, Chairman Wicker, thank you for your efforts. I don’t know exactly the information that you are seeking from the FAA, but I am always pleased when Congressional efforts are made for greater oversight and please consider me an ally in any way that I can be of help in the effort to make sure that the FAA and other agencies respond to Congressional inquiries.

Mr. Dickson, you have been useful to me, valuable to me, and your responses are opportunities to have conversations both in person before COVID–19 and then subsequently by phone and I thank you for that. I am surprised, I certainly am not at all suggesting that anything but safety should drive the recertification process, but it surprises me how long it has taken and it surprises me because I assume that the plane, which was previously certified, the 737 MAX, it should—if it was already certified, it seems to me that the changes necessary to satisfy the needs for safety would be rather modest.

And I guess I am asking is that just a false assumption that—and if so, how did we get to a point in which the magnitude of the problems with the 737 MAX were so great that it is taking a significantly long time to get them fixed? And tell me again, during our last conversation you indicated midsummer. Is that still the case and has COVID–19 slowed down the process in recertification?

Mr. Dickson. Well, thanks for the question, Senator. To your last point, you know, we are not on any timeline. We are narrowing the issues and we have not had any impact with COVID–19 up to this point. When we get to the Joint Operation Evaluation Board, obviously that involves international pilots and international travel, and so there are a couple of alternatives that we are looking at to have the processes in place to be able to support that work.

But up to this point, the process has proceeded without interruption. One of the—you raised a great question and I think it needs to be clear that the redesign of the airplane is not just limited to changing MCAS functionality. The entire flight control system beginning—Boeing undertook this in the June, July time-frame of last year, became a much more ambitious project, and there is much more redundancy.

The flight control computers and pitch compare their signals dynamically. That is an extremely ambitious project. And as we have moved forward, when you make a system like that more robust what happens is it implicates—there are interdependencies with other subsystems on the aircraft that have to be taken into account.

So, you know again, this is—we have moved forward, I think, very diligently and very carefully, and as you know, we have retained all matters within the FAA including the—we will issue the airworthiness certificate ourselves. But that is why this is such a journey that we have been on.

Senator Moran. Well, Administrator, I am in no way suggesting that anything but safety ought to drive your time-frame and the question was really, and we can have this conversation ourselves, was does the magnitude of the changes necessary, does it suggest that the certification initially was significantly flawed to begin with? And I will be glad to follow up. I want to just touch on a cou-
ple of other things in the 30 seconds I have left. I want to explore with you and will submit a question writing about how do we get the FAA to be in a better position to adopt new innovations and move in advancing aviation safety through technology? I think there are some significant opportunities and I want to make sure that we don't lose the chance to pursue those innovations as we pursue certification.

The workforce in Kansas, but across the country, is damaged. Its absence is noted. Furloughs are prevalent across our aviation and aerospace industry in Wichita and South Central Kansas, but elsewhere in our state as well. We are working to find a path for a public-private partnership that keeps those employees in place and on a payroll. And I would seek your advice and suggestions in that regard.

And finally, I appreciate Senator Cantwell’s cooperation along with Senators Klobuchar and Capito in regard to Senate Bill 3959. And again, because of the lack of time that I have, I guess there is no time left. I will follow up with you in writing unless we have a second round of questions.

The CHAIRMAN. Thank you, Senator Moran. And before I go to Senator Blumenthal, let me remind members that we have a series of two votes beginning 11:45 a.m. I have talked with Senator Cantwell. Our intention is simply to share the gavel, proceed on, and do the best we can to conclude both panels of this hearing. We are required by the next committee to surrender this room no later than 1 p.m. and I feel surely that we will be able to do that. And I also appreciate members being so thoughtful as to the 5-minute time-frame with the questions.

Senator Blumenthal, you are recognized.

STATEMENT OF HON. RICHARD BLUMENTHAL,
U.S. SENATOR FROM CONNECTICUT

Senator Blumenthal. Thanks, Mr. Chairman. I am going to be even less genteel than Senator Cantwell. I find your responses with all due respect, Administrator Dickson, to be totally unsatisfactory. The culture of secrecy at the FAA has only been aggravated under your tenure. You have completely refused to respond to any of my letters requesting information, not even an explanation—neither there nor here.

I see no way you can continue in this job if you fail to be more responsive to this committee. And I think it begins today with a commitment to end that culture of secrecy, to commit to major reforms of the kind that the Chairman and Ranking Member have suggested in their legislation. I welcome it because it includes stronger protections for whistleblowers such as I suggested in the bipartisan—in the reform proposal that I advanced with support from Senators Markey, Udall, Warren and Feinstein. Not only protection for whistleblowers, but minimum qualifications for the engineers performing work on behalf of the FAA, targeted audits of ODA units, minimum addressing concerns about compensations, and bonuses for meeting performance goals.

The fact of the matter is that the FAA has been complicit in these crashes by failing to do more diligent oversight. It has almost been like a dog watching TV and there have to be reforms that
take back major swathes of the authority that have been delegated. The FAA has to do the work, not just oversee it. It has to perform work that involves certification. And so let me ask you first, why can the FAA not take back the authority it has delegated over critical safety features?

Mr. DICKSON. Well Senator, I vehemently disagree with your characterization of my level—desire for transparency. And I just want to reiterate the commitment that I made to the Chairman. I will make it to you as well. We want to collaborate and work together with the Committee to raise the bar on aviation safety. Critical, novel technologies, those are things that are typically not delegated by the agency. As I said in my remarks earlier, testing and analysis typically on more routine matters and early in its certification process are typically delegated, but that is——

Senator BLUMENTHAL. But you did delegate that authority with respect to the 737?

Mr. DICKSON. No, sir. No, not until very late in the project.

Senator BLUMENTHAL. Well, late in the project is often the critical phase in the project. Let me move on to another area and I will invite you to expand on your answer in written responses. Would you join me in supporting a prohibition on preemption of claims made against a manufacturer or Airline simply because there has been certification by the FAA? Right now Boeing is taking the position that it will deny all claims against it simply because the FAA certified the 737.

Mr. DICKSON. I would be happy to work with you on that proposal, Senator.

Senator BLUMENTHAL. Well, I was hoping for a yes.

Mr. DICKSON. I am not prepared to respond on that point today.

Senator BLUMENTHAL. Will you join me in supporting time limits on the certificates or certification of specific Airline types?

Mr. DICKSON. I believe you are talking about the changed product rule, and, or amended type certificates, and that is one of the areas that we are looking at and that is harmonized globally with the other states of design and we are looking at that process.

Whether time limits are the most effective way to deal with that remains to be seen. That current rule actually enables safe additions to be brought into very safe existing designs more effectively and it is actually in many cases used less in the U.S. than with other states of design. So something we will have to look at very closely.

Senator BLUMENTHAL. Let me just say concluding, left to its own devices, the aviation certification system puts corporate profits before consumer safety, and this system has to be radically reformed. I am going to ask that my letter of October 24, 2019, which is among many that you haven’t answered, be put in the record. I hope that you will provide an answer in light of your responses here. And it will help to rebuild trust.

The CHAIRMAN. Is that to the Administrator, sir? Is that a letter to the Administrator?

Senator BLUMENTHAL. It is.

The CHAIRMAN. Without objection. It will be done.

[The letter referred to follows:]
Mr. STEPHEN M. DICKSON,
Administrator,
Federal Aviation Administration,
Washington, DC.

Dear Administrator Dickson:

I write to request all documents concerning safety procedures and standards used in certification and oversight of the Boeing 737 MAX. I specifically ask that you provide immediately documents demonstrating Boeing employees’ awareness of issues with the Boeing 737 MAX flight control system (MCAS) and all e-mail or text correspondence between Boeing employees and staff at the Federal Aviation Administration (FAA). While I appreciate the FAA providing the Committee with certain e-mails and instant messages last Friday, our oversight responsibility requires those documents in their full versions, without redactions.

The e-mails and instant messages provided are deeply disturbing—indeed some are shocking—showing serious internal concerns among Boeing employees and possible misrepresentations. They raise serious questions generally about how forthcoming Boeing was in communications with the FAA regarding the MCAS. As you are aware, the 2016 e-mails from Mark Forkner, Boeing’s Chief Technical Pilot on the 737 MAX at the time, are heavily redacted, concealing, for example, the identities of the FAA employees who received them. I have reason to believe that the FAA has additional records related to the 737 MAX that would be of interest to the Committee, including responses from FAA employees to Mr. Forkner’s e-mails.

I am requesting the FAA respond immediately with the unredacted e-mails and any relevant supplemental records so that I can assess these documents before the Committee’s hearing with Boeing executives on October 29, 2019.

The Senate Committee on Commerce, Science, and Transportation has the responsibility and right to exercise oversight authority related to the tragic 737 MAX crashes and the events leading to them. I ask that the FAA provide me with the requested material by no later than October 28, 2019.

Thank you for your attention to this request, and I expect your full cooperation.

Sincerely,

RICHARD BLUMENTHAL,
United States Senate.

STATEMENT OF HON. RICK SCOTT,
U.S. SENATOR FROM FLORIDA

Senator Scott. I want thank you, Chairman Wicker, for holding this important hearing. I want to first thank Mr. Stumo for being here with us today to provide your testimony. My heart goes out to you and your family for your loss. And I think it takes a lot of courage to be able to come and do this today.

Administrator Dickson, I want to thank you for being here today and I want to thank you for your efforts to restructure and improve the FAA to make sure it can again be a global leader in safety and assertiveness. So, can you talk a little bit about how you restructured the FAA to increase accountability and ensure that, you know, you have the capacity again to be the global leader in safety and the certification process?

Mr. DICKSON. Well, thank you, Senator Scott. The level of engagement globally in my first few months has been extremely impressive and I am very proud to have the privilege of leading 45,000 professionals at the agency. They are extremely committed. We started out—we start out with core values. You know, we are a technical organization. As has been said many times, our top priority is safety. We have got to be driven by core values. Rules
aren't going to get us where we need to be. We have got to have an approach where we are transparent. We can have professional disagreements, but we have got to have a way to make sure that we are looking at all sides of every perspective.

So one of the things I really pushed is to deal with issues from a one agency perspective. What I find and I have seen this in the private sector as well is you will have a Department, or in my case a line of business or a staff office, that is pursuing its own goals and objectives and maybe even using its own data.

And so what we have to do is work across the entire agency perspective, because we have a lot of data and there have been a lot of problems solved over the years that have created various pockets, but we have got to be able to see the whole picture. And that is one of the things that we are really working on. What I mentioned in response to Senator Klobuchar's question gets to this point: it is a more seamless integration between our flight standards group and our aircraft certification group.

Senator SCOTT. Thank you. Does your certification process incorporate any cross checking or something similar so you reduce the possibility of factors like human error?

Mr. DICKSON. Again, yes, that has always been a part of the process. But the—what we are looking at as we mentioned in our response to the Secretary's Special Committee report is we are looking at some of the assumptions around human error and how those can be incorporated into aircraft design all along more effectively.

Senator SCOTT. OK. When you think about the issues with the 737 MAX and the certification process, are you reassessing the certification process for all aircraft that you certify?

Mr. DICKSON. Yes, sir. That is what our—all of the reviews that have been done, the work of the Committee, the dialogue that we have had internally within the agency, it is all leading as to a more robust process. I believe that the biggest thing that we can do is implement safety management systems for manufacturers and we are working on that right now. We plan to initiate rulemaking on that shortly. And I am a big supporter that I have seen the benefits in the Airline industry. We need to take those same kinds of benefits into the manufacturing sector.

Senator SCOTT. What is your communication plan to make sure, you know, everybody gets more comfortable that the FAA is changed and that the certification process works and that it is—if you get an FAA certification, you know, you are clearly going to be safe or as safe as you can be?

Mr. DICKSON. Well, we have got—you know, aviation again, is the safest form of travel. Our commercial aviation sector accident rate is down 94 percent in the last 20 years. And you know, we have had hundreds of millions of flights over the last decade with a sterling safety record.

One death is one too many, and of course the 346 deaths that we saw in these two accidents are tragic and unacceptable. So we have got to keep raising the bar with aviation within the U.S. but we have also got to take the responsibility that U.S. products are being maintained and operated around the world and so we need to raise that bar around the world as well.
Senator SCOTT. Thank you, Mr. Chairman.
The CHAIRMAN. Thank you, Senator Scott.
Senator Markey.

STATEMENT OF HON. EDWARD MARKEY,
U.S. SENATOR FROM MASSACHUSETTS

Senator MARKEY. You should have known about the safety of the Boeing 737 MAX before it ever took off. The tragic fate of Lion Air flight 7610 should have led to an immediate grounding of this plane, yet the FAA allowed the clearly unsafe 737 MAX to keep flying for 5 months after the first crash which killed 189 people. During these 5 months, the FAA repeatedly said it did not have enough data to ground the MAX. However, we have since learned that the FAA conducted an unpublished risk assessment after the Lion Air tragedy.

This report predicted 15 more fatal crashes in the life of the MAX, 15 more crashes. The FAA knew that the 737 MAX was not safe and still let it fly. The FAA knew and it gambled with thousands of lives. The FAA only changed course after 157 more people died on the Ethiopian Airlines flight 302, but this second tragedy never had to happen. If the FAA had been transparent with its data, everyone would have demanded the MAX be grounded before a second crash.

It is now your responsibility to make sure the FAA is completely transparent while it reviews whether to unground the MAX. Will you commit to making every document and study related to the ungrounding of 737 MAX public?

Mr. DICKSON. Senator, I appreciate the question. The document that you are referring to is actually not a predictive document, it is a decision support tool. It really is an actuarial calculation that is designed to, when an unsafe condition is identified, designed to make sure that we are——

Senator MARKEY. Will you make every document available—every document? It is an easy question. It is an easy question, Mr. Dickson. Will you make every document available for the public?

Mr. DICKSON. Senator, I am not sure what normal protocol is on that but we will be as transparent as we possibly can.

Senator MARKEY. No. No, that is not the question. Not as you can. That is what happened the last time. You weren’t transparent the last time. Will you commit to making every document public?

Mr. DICKSON. Senator, I am not in a position to commit to that at this point.

Senator MARKEY. Well, if you are not then you are part of a cover-up—then you are just—you are complicit. You are not providing the information which is going to be needed. And I just want to follow up for a second on what Senator Blumenthal was just asking because despite all of its wrongdoing, Boeing has barely been held accountable for these tragic crashes. Although Boeing’s former CEO was fired, he left the company with a $60 million golden parachute.

Boeing’s new CEO was sent off at an offer of $7 million bonus for rushing the MAX back into service. And Boeing has failed to even settle the claims of victims’ families in the Ethiopian Airlines flight 302 lawsuits. And I find this lack of accountability absolutely
outrageous. The flying public cannot trust that Boeing has learned its lessons until the company and people responsible are held to task for the 346 deaths they caused.

So I am appalled, but not surprised Boeing is now arguing in court that the FAA certification of the 737 MAX should shield it from liability to the victims’ families, even though the plane was clearly unsafe and defective. Again, I want to follow up on Senator Blumenthal. Administrator Dickson, do you support Boeing’s position or should the victims’ families be able to hold Boeing accountable for a defective plane regardless of whether the company complied with broken FAA regulations?

Mr. DICKSON. Senator, I am not in a position to comment on that, but I would certainly be willing to follow up with you on that question.

Senator MARKEY. Look, there is no way that Boeing should escape liability. I think you know that and I think it is going to be important for you ultimately to make a statement to the effect that Boeing had a responsibility to ensure that this plane was safe, and if it did not act that way, then they should be held accountable. And I think the FAA and you should make a statement to that effect.

Mr. DICKSON. Senator Markey, I just want to make clear that the responsibility to produce a safe product does belong with Boeing. Absolutely.

Senator MARKEY. OK, and I think that is important for people to hear. Boeing has responsibility for making a safe product. And I am glad you clarified that.

Mr. DICKSON. Absolutely.

Senator MARKEY. Because it is important for the record to indicate that it is not just the FAA but Boeing itself that has responsibility. And if they did not discharge that responsibility, they should be made liable to these families.

The CHAIRMAN. Thank you, Senator Markey. Thank you, sir.

Senator Udall.

STATEMENT OF HON. TOM UDALL,
U.S. SENATOR FROM NEW MEXICO

Senator UDALL. And thank you, Ranking Member Cantwell. Administrator Dickson, the duty of our committee is to closely examine the failures of both the Federal Aviation Administration and Boeing to prevent the tragedies that occurred last year. We must re-examine the current system that allow for a much too cozy relationship between regulators and companies including Boeing.

I want to make this point crystal clear. Boeing’s efforts to push for more self-certification and to push the FAA to move faster and faster to approve the 737 MAX were totally counterproductive and resulted in tragedy. This continues to be a case study of the complete and total failure of self-regulation.

And I think this will go down as one of the big mistakes in history in this area. Mr. Dickson, last month in the FAA’s response to the special committee’s report, you said the Administration would increase staff at the office at the middle of this investigation, the organization, designation, authority of the ODA office. The 2018 FAA bill required that FAA do so. Why has it taken over a
year and hundreds of lives lost before you committed to expanding this office as required by law?

Mr. Dickson, Senator Udall, appreciate your question. We stood up the ODA office toward the end—well actually well in advance of the budget request, but we didn’t have the resources at that point for permanently staffing it. That is what that 2021 request will allow us to do.

Senator Udall. I support legislation before this Committee that would reform the ODA process. I believe that it is essential to prevent future accidents. Does the FAA recommend any reforms to ODA?

Mr. Dickson. Yes, sir. As I have mentioned several times this morning, certainly the implementation of safety management systems, the use of safety risk management integrated system, safety assessments, is very important as well as the consideration of the operating environment around the globe. These are some of the recommendations that we have responded to and I think they are very consistent with where the Committee is headed in this area.

Senator Udall. Have you implemented those changes already?

Mr. Dickson. Well with respect to the—we are working on them. We are in the process of—we have plans to recruit in system safety engineers and software engineers as well, as well as additional human factors experts. We are also on our triple 7x certification plan. We are using a technical advisory board as we did with the MAX. And as you know with the 737 MAX, we have retained every aspect of that project as well, including the issuance of the individual aircraft air awarding certificates and we will continue to do that until we see that through.

Senator Udall. An important component in the certification process is that the FAA must be made aware of changes a company makes to its equipment, but reports say that the FAA was not aware of the significance of the changes Boeing made to the equipment of the 737 MAX. What specific steps or policy changes has Boeing made to regain trust of the FAA and the American people, and how can you assure us that Boeing will truly comply with all regulatory requirements in the future?

Mr. Dickson. Well, Senator, it is a great question. Boeing has voluntarily implemented some aspects of safety management system. They have made some changes to their internal processes. We are seeing a culture shift in some areas, but there is more work to be done, and we are going to stay right on that process to make sure that we see this through as we continue to reform our processes in the agency around voluntary safety reporting and safety management systems as well.

Senator Udall. Thank you, Mr. Chairman.

The Chairman. Thank you, Senator Udall.

Senator Rosen.

STATEMENT OF HON. JACKY ROSEN,
U.S. SENATOR FROM NEVADA

Senator Rosen. Thank you, Chairman Wicker, Ranking Member Cantwell, Administrator Dickson, and Mr. Stumo. I am incredibly sorry for your loss and for the loss of all the souls on planes that crashed in this fashion. And so today I want to talk a little bit
about Boeing, more Boeing specific questions building on some of the topics that have already been asked. And I would like to revisit a topic that I raised with Boeing CEO when he came before this panel.

According to news reports, when the Brazilian National Civil Aviation Agency came to the U.S. in 2017 to test out the MAX 8, they determined the changes made to the old 737 were significant enough that they needed much more information from Boeing and were going to provide it to their pilots. When Brazil’s Aviation Authority eventually published it, they published their pilot training requirements, it was therefore able to flag the MCAS as one of the changes that the pilots needed to take into consideration when flying the MAX 8.

And yet, for U.S. pilots, MCAS was not mentioned in their manual. So Administrator Dickson, why was that the case and why didn’t the FAA not seek additional information for Boeing on the MCAS system?

Mr. Dickson. Senator Rosen, thank you for the question. I am on record and I strongly believe that it should have been in the material, in the operations material that was provided to the pilots. Anything that affects the flight control system of the airplane, the pilots should have. So I think that I have concerns about how that was initially done.

Senator Rosen. I appreciate that. So, can you assure us that moving forward, the FAA will make it a practice when other countries make significant changes to their product manuals based on major operational changes, that the FAA will consider or absolutely do this, doing so as well and notifying our U.S. Airlines and pilots to prevent any tragedies?

Mr. Dickson. That is a great question. We do that now through the certification management team with the other states of design. And depending on the operating environment in different parts of the world or how pilots are trained, there may be differences of opinion of exactly what those details are, but yes, I can——

Senator Rosen. Would you agree with me that it might be better to over-inform than to not inform at all so that way on the off chance that somebody might not know, isn’t it always better to give a little bit more information?

Mr. Dickson. That is how I was going to finish the sentence. So I think that if there is any doubt that having that information available is always going to be a better place to be.

Senator Rosen. And then I would just like to follow up with those little time I have left more broadly. Can you please speak to what steps you are taking to ensure that manufacturers disclose those safety critical systems that are not activated by the flight crew? How do you plan to be sure that this information is disclosed in pilot manuals because they need to know what is under their control and what maybe isn’t, how they do the overrides.

Mr. Dickson. So really two things. The integration of the pilots earlier in the design process is going to be very important. In fact, we are undertaking training our technical pilots and our inspectors within the FAA who aren’t certification experts but who are in that aircraft evaluation group, train them on things like system safety assessments and certification processes so they are actually embed-
ded earlier on in the certification process. And that will put us in a much better position to have visibility into those issues during the—as a certification of a particular project goes forward.

Senator ROSEN. Thank you.

The CHAIRMAN. Thank you very much, Senator Rosen. Senator Duckworth. We are able to be joined remotely by Senator Duckworth.

STATEMENT OF HON. TAMMY DUCKWORTH, U.S. SENATOR FROM ILLINOIS

Senator DUCKWORTH. Hello, can you hear me now?

The CHAIRMAN. Yes, OK. Thank you. Yes, glad to hear your voice.

Senator DUCKWORTH. Thank you, Mr. Chairman. I apologize. Administrator Dickson, I apologize I can't be on video right now, but it is good to see you again. I have several questions for you. So in the interest of time, please limit your answers to yes and no. Given that the FAA is responsible for aviation safety in the United States, your agency can take corrective measures including legal enforcement actions for violations of the Federal aviation regulations. Is this correct?

Mr. DICKSON. That is correct.

Senator DUCKWORTH. It is FAA—I am sorry. It is FAA policy to investigate complaints of low-flying aircraft that endanger persons or property. Is that correct?

Mr. DICKSON. Yes, any kind of reckless operation of an aircraft is responsibility of the pilot in command and that is something that we would want to investigate and look into.

Senator DUCKWORTH. Thank you. Now, with some flexibility for helicopters in my FAR AIM manual from 2018, so maybe some things have changed but I doubt it, FAA regulations require a minimum altitude of 1,000 feet above the highest obstacle for congested areas, including any open-air assembly of person. Is this correct?

Mr. DICKSON. I believe that is correct. I would have to go back and verify that for myself.

Senator DUCKWORTH. I don't. You fly—you are used to bigger and faster aircraft—but I did——

Mr. DICKSON. You need to check me out on a helicopter sometime.

Senator DUCKWORTH. Well, you know the last one I flew got a big hole in the—so I might not be the right person——

[Laughter.]

Senator DUCKWORTH. And Mr. Dickson, this military related to—Lakota—pull up the slide. This aircraft was flown roughly 100 feet above peaceful protesters in downtown Washington, D.C. on June 1. Are you as outraged as I am about this extremely dangerous maneuver?

Mr. DICKSON. I am not . . . well, we are looking into that, Senator. I am aware of the circumstances and we're looking at this from a compliance with air traffic regulations in addition to the operation of the aircraft and it is an ongoing investigation. I believe what you are referring to took place within the prohibited area, which is not under active control. But the pilot in command still is responsible for following the safety regulations.
Senator DUCKWORTH. OK. Well—I am going to have to question you along those lines in just a minute. But before that, the International Red Cross emblem, as you can see on this Lakota aircraft, is painted on, is a university recognized symbol of Medical Aid and its use is prohibited under the Geneva Convention.

If staff could pull up slide two. Mr. Dickson, what about this UH–60 Black Hawk helicopter flown above protesters on the same night? Like the Lakota, did this helicopter endanger civilians on the ground and potentially violate FAA safety regulations?

Mr. DICKSON. We have not—again, it is under investigation. We are looking into it carefully and I would be happy to follow up with you once we have completed our review.

Senator DUCKWORTH. Thank you. These helicopters were reportedly flown by the D.C. National Guard, which is the only National Guard unit in the Nation that reports directly to the President of the United States due to D.C.’s unique political status.

According to local news reports, the downward force of this helicopter’s rotor blade, more commonly known as rotor wash, knocked a nearby small tree. Mr. Dickson, as you said, you are talking about looking into it. Are you saying that the D.C. flight status district office has opened an investigation into these events?

Mr. DICKSON. Yes, we have opened an investigation.

Senator DUCKWORTH. When do you expect the investigation’s final report to be available?

Mr. DICKSON. I do not know this morning, but I will follow up with you as it proceeds.

Senator DUCKWORTH. Wonderful. So you will commit to providing my office with the copy of the report as soon as possible?

Mr. DICKSON. We will provide you with the results of the investigation, yes.

Senator DUCKWORTH. Thank you. Now, if staff can pull up slide three, please. Mr. Dickson, from an aviation safety perspective, do you agree with this tweet from President Trump who is condoning dangerous maneuvers to intimidate American protesters on American soil? He tweeted, “the problem is not the very talented, low-flying helicopter pilots wanting to save our city, the problem is the arsonists, looters, criminals, and anarchists, wanting to destroy it and our country.” Do you agree with this tweet?

Mr. DICKSON. I am not really—I am not familiar with—it is the first time I have seen it. But I am not familiar with it. And I don’t know how it applies—I am not sure how it applies to this particular situation. But as I said Senator, we will look into the facts of this particular event.

The CHAIRMAN. Senator Duckworth, we have had a technical issue. I believe you have referred to three slides and let’s enter those into the record, without objection. Is there any objection?

[No response.]

[The information referred to follows:]
UH-72 "Lakota" Helicopter "100 Feet Above Protestors with International Red Cross Insignia
Photo taken at 5th and E Streets NW (Judiciary Square), Washington D.C. – June 1, 2020

UH-60 "Blackhawk" Helicopter Above Protestors
Photo taken at 5th and E Streets NW (Judiciary Square), Washington D.C. – June 1, 2020
The CHAIRMAN. Then it will be done. Thank you, Senator Duckworth.
Senator Baldwin.

STATEMENT OF HON. TAMMY BALDWIN,
U.S. SENATOR FROM WISCONSIN

Senator BALDWIN. Thank you, Mr. Chairman. I—Mr. Dickson, this past December, Amy Gannon and her 13 year old daughter, Jocelyn were killed in a helicopter crash while on a family vacation in Hawaii. Amy Gannon was a local business leader and an advocate for entrepreneurs in Wisconsin and she was an energetic and positive presence for the Madison area in Wisconsin and, in fact, the whole state.

I understand that there is an ongoing NTSB investigation into that helicopter crash, but I would also note for you and this committee the serious whistleblower allegations of misconduct at the FAA and that the whistleblower has said that he was prevented from inspecting the Safari aviation aircraft prior to its crash in December.

So Mr. Dickson, can I have your commitment to working with me to help ensure that what happened to the Gannon family is not repeated for any other family?

Mr. DICKSON. Yes, Senator. As I have said many times, you know, we have got to make sure that we are doing everything possible to promote aviation safety. Helicopter air tours and other operations of this type are not where they need to be from a safety perspective and it is a big focus for the agency. We are engaged in training our inspectors to make sure that they have the appro-
appropriate background and familiarity with this type of operation. So we would welcome working with you on this subject.

Senator BALDWIN. Thank you. Mr. Dickson, in December, Senator Duckworth and I sent you and Secretary Chao a letter following up on a bipartisan amendment with now Chairman Wicker that we have included in the FAA Reauthorization Act. That amendment required the Department of Transportation to review existing regulations and standards ensuring assistance for passengers with disabilities in air transportation.

Specifically, our letter noted a concern that current regulations do not require hands-on training for employees or contractors when moving passengers, including those with spinal cord injuries. Passengers have been dropped during the transfer process and this is unacceptable. I have not yet received a response to our letter which requested an update on your review of existing regulations and standards. Can you share that update with me now?

Mr. DICKSON. Senator, this is a matter that is not within, specifically within the FAA’s purview. It is within the aviation policy area of the Department, but I will take—right after this hearing, I will take it and we will get an update for you from the Department.

Senator BALDWIN. Mr. Chairman, I can’t currently see the time clock.

The CHAIRMAN. A minute and a half.

Senator BALDWIN. Oh, excellent. So I—Administrator Dickson, at your confirmation hearing before this committee just over a year ago, I noted the ongoing investigations at the FAA here in Congress and within the DOT Inspector Generals and the Department of Justice. I asked you then, if confirmed, what would you require of Boeing before ungrounded the 737 MAX? In the year that you have been Administrator of the FAA, some of these investigations have, in fact, concluded and produced reports with recommendations and other investigations, including the Department of Transportation Office of Investigator General audit, have not yet concluded.

We continue to see reports in the media of Boeing’s plans. Most recently that Boeing is aiming at conducting a key certification test later this month. So I want to ask you the very same question that I asked you a little over a year ago, as head of FAA, what will you require of Boeing before giving the green light to ungrounded that 737 MAX?

Mr. DICKSON. We will—it is a great question. We will require every step of the process to be completed. We are not on any timeline. I have said many times to my team that we are going to retain every aspect and we will work the process through to completion however long that takes. We won’t have undue delays. We will be ready to go.

But one of the things that we have been working with Boeing on, and we have seen some improvements, have been to give us complete data submissions in the certification work as we have gone forward and we will continue to do that. Also, as we work forward, there are some civil penalty actions that we have taken.

I believe it is the second largest civil penalty in the history of the FAA against Boeing, and we will continue to look at their perform-
ance, and I reserve the right to hold them accountable moving forward as well on that way if that is necessary.

Senator BALDWIN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much. Senator Cruz.

STATEMENT OF HON. TED CRUZ, U.S. SENATOR FROM TEXAS

Senator CRUZ. Thank you, Mr. Chairman. Mr. Dickson, a little over a year ago, you sat before this committee at your confirmation hearing. At the time I and others told you to be pissed off at what had happened. You have been in office 329 days. We have heard today that you are stonewalling the Chairman’s investigations, that you are refusing to answer multiple letters from at least one of my colleagues on the other side of the aisle, Senator Blumenthal, and that you have yet to provide responsive documents to Mr. Stumo’s FOIA request filed 8 months ago. May I ask you some simple questions? In the process of certification of the 737 MAX, did Boeing lie to the FAA?

Mr. DICKSON. I can’t say—I mean, definitely there was incomplete information and fragmented information that was provided. No doubt.

Senator CRUZ. Why did one of their senior test pilots, Mr. Forker, write in a text, “so I basically lied to the regulators unknowingly.”?

Mr. DICKSON. I don’t know. I can’t speak for him. I don’t know what he meant by that, Senator.

Senator CRUZ. So in 329 days what have you been doing if not figuring out whether they lied and what they lied about?

Mr. DICKSON. I am interested in learning from the past and making the process and the agency more effective and better going forward. The important point is that the information was not provided in the way that it needed to be provided. That in itself degrades the trust that we need to have as a foundation to the certification process.

Senator CRUZ. OK. Let’s learn—

Mr. DICKSON. Whether an individual lied, I can’t—

Senator CRUZ. Let’s learn from the past. Did the FAA screw-up in certifying the 737 MAX?

Mr. DICKSON. I have concerns I would say that there were mistakes made, yes.

Senator CRUZ. So, in Washington the passive voice is a classic tell. Mistakes were made is a great way of avoiding responsibility because there is no actor in that phrase mistakes were made. Who made the mistakes and why? Don’t speak in the passive voice.

Mr. DICKSON. The manufacturer made mistakes and the FAA made mistakes in its oversight of the manufacturer.

Senator CRUZ. And what were the mistakes and why were they made?

Mr. DICKSON. The full implications of the flight control system were not understood as design changes were made.

Senator CRUZ. Has anyone at FAA been fired?

Mr. DICKSON. There have been changes in leadership in various areas. No one has been fired over this particular matter up to this point.

Senator CRUZ. Has anyone been disciplined over this matter?
Mr. DICKSON. No, not specifically.

Senator CRUZ. So unknown somebodies made unspecified mistakes for which there have been no repercussions. Is that right?

Mr. DICKSON. I would not say that there have not been repercussions.

Senator CRUZ. Well, please tell us the repercussions.

Mr. DICKSON. The repercussions are that we are—we have significant reforms we are making to the process and we are standing up audit processes and review processes and more robust safety systems so that we can be more effective in the future as an organization.

Senator CRUZ. Is there a systemic problem of agency capture at the FAA?

Mr. DICKSON. You know, I remember us having this conversation, Senator, and I don't believe that it is agency capture but I do believe that when you have very capable technical subject matter experts, that they get focused on their checklist, or their part of the process, they hold themselves accountable for that, and they don't always see the whole picture.

So that is why we need as leaders to make sure that we are taking an integrated approach in our dealings, in this case what the manufacturer, air carrier, whatever the private sector regulated party is that we are responsible for overseeing.

Senator CRUZ. Mr. Dickson, in your opening statement, you said, “safety is a journey not a destination.” For the 346 souls lost on the two 737 MAXs that crashed, safety was all about arriving at their destination. They should have arrived at the destination had Boeing not covered up serious safety concerns, number one, and had the FAA done its job of making sure that the MCAS was not put in the field without pilots being appropriately trained.

I think the concern this committee has is we are not seeing from you any of the urgency of fixing this problem. It is very easy to go into an agency and yourself get captured by the agency. You understand, sir? You do not work for the Airlines and you do not work for Boeing. You work for the American people. And this committee expects transparency.

This committee expects that when we ask questions specifically about malfeasance that cost the lives of 346 people, that you will be forthcoming and answer those questions. And I am hopeful that is the conduct we will see going forward. Thank you.

STATEMENT OF HON. JOHN THUNE,
U.S. SENATOR FROM SOUTH DAKOTA

Senator THUNE [presiding]. Thank you, Senator Cruz. Now I thank the Chairman for holding today’s hearing is part of this committee's continued oversight of aircraft certification in the wake of the two tragic crashes in Indonesian and Ethiopia. My deepest sympathies remain with the families of the victims and we want to thank them for being here today.

And I want to associate myself with the comments that have already been made by the Chairman and other members of the Committee emphasizing the importance of being responsive to requests for documents and other information as we conduct oversight. I hope you are hearing loudly and clearly, Mr. Dickson, how critical
that is to the work that we do and the work that you do in order to keep the flying public safe.

One of the major lessons that we learned from these tragic accidents is that a thorough consideration of human factors should become a more fundamental component of the design and testing of new aircraft, especially as avionics systems become increasingly complex. Where do you see opportunities for the FAA to improve its consideration of human factors in the aircraft certification process?

Mr. Dickson. It is a great question, Senator. First of all, it is bolstering our human factors expertise. So there is a workforce component in addition to working with Academia and NASA on these issues. Frankly, also involving our pilots and our flight standards group, our aircraft evaluation group into the certification process as an earlier and more integrated point in the process.

It will allow us to take a more holistic view of that role of the human in aircraft design and not look at them as independently as they have been in the past. And because it is more than a matter of just training a pilot to operate a particular machine. We want to make sure that the pilot is viewed as a part of the design.

Senator Thune. Good. Well, that was one of the things I think that we learned as there were gaps in training as well and seems like a bit serious issue to be addressed. You mentioned in your testimony the FAA will need to ensure that personnel receive the training they need to adequately adapt to an industry that is constantly adopting new technologies and implementing complex systems. In line with that discussion, what initiatives is FAA pursuing to ensure the current personnel have the training they need as well as recruit and hire new personnel?

Mr. Dickson. Well, that is, again a great question. Our aviation safety organization has a 10-year workforce plan and we are in the process of continually reviewing our needs. In our response to the Secretary’s Special Committee report, we will have a focus again on human factors experts but also system engineers, software engineers, and data scientists so that we can stay ahead of new technologies as they are introduced.

Senator Thune. Your testimony also discussed, and you mentioned it just previously here. The FAA has plans to adopt a more holistic approach when it comes to certification consistent with recommendations from the special committee to review the FAA’s aircraft certification process. This includes better coordination between various FAA offices and adoption of a safety management system for aircraft manufacturers. How does the FAA plan to improve coordination between offices such as the Aircraft Certification Service and flight standards responsible for different aspects of the certification process?

Mr. Dickson. Well, it is a great question. We have recently initiated a program to train our aviation safety inspectors who are involved in the aircraft evaluation group on many of the processes that our aircraft certification engineers actually use so that they are able to participate more fully in all phases of that process.

In addition to that, we are standing up a project management or program management function that will take these programs where you have over a period of years and sometimes you have per-
sonnel changes and people who may not be there throughout the whole 5 to 7 years of the project to make sure that the entire project hangs together from beginning to end. So those two functions should improve the coordination. That is the goal between those two parts of the agency.

Senator ThUNE. Can you speak quickly here to how requiring adoption of a safety management system for manufacturers would benefit FAA’s oversight of the certification process?

Mr. DICKSON. Yes, Senator. SMS has many benefits. I think it is actually the most important step that we can take to improve aircraft certification. On the company’s side the manufacturer puts, again, safety responsibility where it belongs and it promotes transparency and voluntary employee reporting on safety issues.

And it refocuses accountability for product safety to the highest levels of the company. On the agency side, it allows us to oversee the system and the process, and it reinforces the sharing of data in a dynamic process between the manufacturer and the agency.

So it greatly improves the regulator’s ability to identify hazards and manage our oversight before a compliance bust actually occurs. We don’t have to wait for that because we are getting a data feed all throughout the process.

Senator ThUNE. Good. Thank you. And my time has expired. Next up, and I think she is with us remotely, is Senator Sinema. And upon the conclusion of Senator Sinema questions pending any other Senators’ appearances, we will move to the second panel.

Senator Sinema.

STATEMENT OF HON. KYRSTEN SINEMA,
U.S. SENATOR FROM ARIZONA

Senator SINEMA. Thank you, Mr. Chairman. Administrator Dickson, many Airlines require passengers and crew to wear masks on airplanes. However, reports have shown that enforcement for non-compliance has been uneven and difficult.

The CDC tells us that masking is a vital tool for public health, particularly in places where social distancing is not possible like airplane cabins. The FAA needs to do more to ensure that the aviation system is mitigating the spread of the virus. Right now the FAA only has recommendations but no Federal requirements for masks. Why isn’t the FAA mandating masks on flights, and what more can you do to ensure that passengers are wearing masks?

Mr. DICKSON. Well, thank you, Senator, and we have been working throughout as the aviation safety authority to provide our aviation expertise to the public health authorities. And as Secretary Chao has said, we believe that is—our space is in aviation safety and their space is in public health.

Having said that, we have made those standards available to the Airlines and to labor, stakeholders, and others. I have told them very specifically that I expect for them to abide by and enforce those standards, including the wearing of face coverings on commercial aircraft. And we will continue to do that.

We are seeing in recent days the adoption of more stringent enforcement on the part of the Airlines and we will continue to monitor that situation using the Airlines’ safety systems to make sure that they are following through.
Senator Sinema. So, does the FAA plan to mandate that masks are worn on flights? It sounds like you are recommending this and you are telling us about your expectation, but there is no enforcement mechanism.

Mr. Dickson. We do not plan to provide an enforcement specifically on that issue. However, we are reviewing their voluntary safety programs to make sure that they are following through.

Senator Sinema. On a related topic, as you might know, I am working on legislation with Senator Cruz to create a contact tracing mechanism for international travelers as they enter our country during COVID–19. Given your position on the Interagency Task Force addressing COVID related issues, can you discuss the importance of contact tracing mechanisms for travelers during pandemics and detail any ongoing efforts that you are taking to address this issue?

Mr. Dickson. It is a great question, Senator. We have been involved in the contact tracing work since the very early days, really dating back to January, frankly. And again, we are using our aviation expertise to act as a facilitator between the Airlines in this case and the public health authorities who can manage that data. And the question is, that is a need that we all have, we all agree with that.

The Department is engaged in this as well. And we certainly have an open mind, but we are trying to make sure that that information gets ingested into the systems where the CDC can conduct the contact tracing that it needs to conduct.

Senator Sinema. Thank you. Airports in Arizona, including Sky Harbor and Phoenix, Tucson and the Phoenix Mesa Gateway, have asked for more tools to speed up the construction of the airport infrastructure. Earlier this week, I introduced legislation with Senator Young, the Expedited Delivery of Airport Infrastructure Act, to incentivize more efficient completion of airport construction projects.

Our bill would allow airports to use airport improvement program funds to incentivize faster airport projects. Have you had a chance to review our legislation and do you have any thoughts on helping airports expedite these projects?

Mr. Dickson. Well, thank you, Senator. I am familiar with the proposal. I have not actually seen the legislative text. But from what I understand, it is consistent with the need to streamline and facilitate infrastructure projects. So as I understand it, it is something that we would support and the Department would support.

Senator Sinema. Thank you. Thank you, Mr. Chairman. I yield back my time.

The Chairman. Well, thank you very, very much. And now pursuant to the statement made by Mr. Thune, we will move to the next panel. Mr. Administrator, thank you very much for your presentation today, and we certainly look forward to following up with you——

Mr. Dickson. Thank you, Mr. Chairman.

The Chairman.—on all other matters. Let me go ahead and before we excuse you, we will have questions for the record as I am sure you are familiar. Upon receipt, we ask you to submit your
written answers to the Committee as soon as possible. And I am sure you will do that. So at this point, thank you, sir.

Mr. DICKSON. Thank you.

The CHAIRMAN. And if staff will assist Mr. Stumo in coming to the microphone, we will begin our second panel. And a vote is occurring. And again, we are going to pass the gavel around and try to accommodate Senators and the schedule. And so if we are ready, our next panel is Mr. Michael Stumo.

As we said earlier, father of Samya Rose Stumo who tragically died on Ethiopian Airlines flight 302. Mr. Stumo, thank you for your presence today. And you have a written statement which will be submitted in its entirety and we ask you now to summarize your testimony. You are recognized.

STATEMENT OF MICHAEL STUMO, FATHER OF SAMYA ROSE STUMO, VICTIM OF ETHIOPIAN AIRLINES FLIGHT ET302

Mr. STUMO. Thank you, Chairman Wicker, Ranking Member Cantwell, members of this committee. Chairman Wicker and Ranking Member Cantwell, appreciate your recent legislative proposal, which is an improvement. I will have some ideas from me and the families in how it can be further improved. The ET 302 families are also indebted to you, Ranking Member Cantwell, for dedicating time and effort to learning about our families, the facts, and the solutions so there is not a third crash. Samya’s 26th birthday will be in less than 2 weeks. I speak for my family. I don't speak for the other ET 302 families.

The Lion Air plane crashed into the Java Sea on October 29, 2018 killing all 189 passengers. That Boeing 737 MAX 8 was only three months old. After an angle of attack sensor failed, the pilots fought with what we now know is the MCAS system for 13 minutes before the crash. FAA didn't ground the plane. Boeing put out a statement saying, “the MAX 8 is as safe as any airplane that has ever flown the skies.” It was not. March 10, my daughter Samya was traveling on her first international trip for her employer, Thinkwell.

She flew from Dulles to Ethiopia for a layover. After she arrived, she texted us, just landed in Addis Ababa, another two hours to Nairobi. She never made it. Samya boarded the MAX around 8:30 local time. That aircraft was only about four months old. Again, the angle of attack sensor failed and this new plane. the MCAS, again, repeatedly engaged in pushing the nose down to the ground. Samya experienced six minutes of roller coaster terror. So did the others on the plane.

The plane plowed into an Ethiopian farm field, buried itself dozens of feet into the ground. When my family and I visited the crash site, we saw that the plane and the passengers had broken into small pieces, and were mixed together with jet fuel. The first crash should not have happened. The second crash is inexcusable. Between the crashes and December 18—December 3, 2018, we now know that FAA had done an internal risk assessments projecting 15 more crashes of the MAX in its lifetime.

In a slideshow dated December 18, 2018, Boeing was reassuring FAA that pilots could handle MCAS failures. They could respond immediately, react immediately, fix it immediately. FAA, we now
know, secretly asked Boeing for a software fix in 10 months to keep the plane going. The crash happened before 10 months was up. They gambled, we lost. So the MAX was a plane developed in the Obama era, but certified March 2017. It was a deadly aircraft with ill-fitting engines bolted to a fifty-year-old fuselage. Rather than fixing the aerodynamic design of the aircraft, Boeing took the cheap way out using glitchy software that relied upon input from a single sensor to push the nose of the plane down to the ground in certain situations.

This was a pattern at Boeing. In 2013, they minimized the MCAS to FAA saying it was an extension of the existing speed trim system. Everything I am saying here has all been found in reports. And those reports are linked in my testimony. In 2016, they drastically strengthened the MCAS and designated it as a safety-critical system. And that phrase means something, safety-critical systems.

We now know that the chief Boeing test pilot bragged about Jedi mind trick in the FAA into accepting less pilot training. In 2017 another Boeing employee said, “the airplane is designed by clowns who, in turn, were supervised by monkeys.” In 2018, yet another employee wrote, “I still haven’t been forgiven by God for covering up what I did last year.” Boeing engineers told us—have told us the families that the FAA and industry is allowed undue influence on safety engineers to creep in.

The prior system resisted undue influence because FAA appointed, they removed, and they supervised Boeing engineers involved with certification duties. Now FAA allows Boeing to self-certify. Boeing engineers are cut off from FAA technical specialists. By reporting only to Boeing managers, profit and timeline pressures can overwhelm the safety culture. The prior system resisted undue influence. The current ODA practice invites undue influence.

Last October, a committee of International Aviation Regulators, the Joint Authorities Technical Review Committee released a report critical of FAA and the MAX. The report also found the undue influence, found many problems with the FAA reducing direct involvement with critical-safety systems. That is what the international report found. They were too much reducing direct involvement with critical-safety systems. They determined that the FAA engineering staff overseeing Boeing were too few, too unqualified to do so.

FAA has never responded to that report. EASA, the European agency and Transport Canada told FAA last year they will independently validate its findings rather than deferring as they have to FAA. The FAA's core vision appears to be to reduce this direct involvement in certification and merely push paper and watch PowerPoint presentations.

The agency seems comfortable to be as one Boeing employee said, “dogs watching TV.” I expect better. So do the ET 302 families and the flying public. My time is up. I am happy to spell out the legislative changes in any question/answer session. Thank you for allowing me.

[The prepared statement of Mr. Stumo follows:]
PREPARED STATEMENT OF MICHAEL STUMO, FATHER OF SAMYA ROSE STUMO, VICTIM OF ETHIOPIAN AIRLINES FLIGHT ET302

Thank you Chairman Wicker, Ranking Member Cantwell and the members of the Committee on Commerce, Science and Transportation for holding this hearing and allowing me to submit this written statement. My name is Michael Stumo and I am the father of Samya Rose Stumo who died on flight ET302 on March 10, 2019. Her 26th birthday will be in less than two weeks. I speak for my family but not for the other ET302 families. Recent legislation introduced by Senators Wicker and Cantwell improves upon a prior version of the bill. But it is not yet supported by my family or, as many have communicated to me, the other families of Flight ET302. My testimony includes several issues that must be addressed in future improvements to this legislation.

1. The JT610 Crash
A Boeing 737 MAX 8 crashed into the Java Sea on October 29, 2018 killing all 189 passengers. The Lion Air plane was only three months old. The flight JT610 pilots fought with what we now know was the MCAS system for 13 minutes before the crash. An angle of attack (AoA) sensor had previously malfunctioned and been replaced. The replacement sensor again malfunctioned, there was no redundancy in case of failure and thus the MCAS system repeatedly pushed the nose down until it overpowered the pilots and slammed the plane into the sea.

After that crash, the JT610 pilot’s mother, Sangeeta Suneja, raised the alarm about the plane and called for simulator training. But few paid attention to her. Many blamed the pilots. Boeing said the MAX 8 “is as safe as any airplane that has ever flown the skies.” It was not. My family and I now know much more than before.

2. The ET302 Crash
On March 10 last year, my daughter Samya was traveling on her first international assignment for her employer. She had recently graduated from the University of Copenhagen School of Public Health and landed her dream job at ThinkWell in January 2019 to help cause patient centered change in the global health field.

Samya flew from Dulles to Addis Ababa. After she arrived, Samya texted us, “Just landed in Addis Ababa—another 2 hours to Nairobi.” She boarded a Boeing 737 MAX 8 at around 8:30a local Addis time. She sat in seat 16J, an aisle seat.

Flight ET302 was a daily flight between the two cities, often carrying U.S. diplomats to and from Nairobi. The plane was only four months old. As flight ET302 took off, something went wrong with the left hand angle of attack (AoA) sensor. There was another AoA sensor on the co-pilots’ side. It was working properly but it was not connected to the MCAS system.

The MCAS system wrongly kicked in, repeatedly pushing the nose down soon after takeoff. Captain Sully Sullenberger said:

“the failure of an AOA sensor quickly caused multiple instrument indication anomalies and cockpit warnings. And because in this airplane type the AOA sensors provide information to airspeed and altitude displays, the failure triggered false warnings simultaneously of speed being too low and also of speed being too fast. The too slow warning was a ‘stick-shaker’ rapidly and loudly shaking the pilot’s control wheel. The too fast warning was a ‘clacker’, another loud repetitive noise signaling overspeed. These sudden loud false warnings would have created major distractions and would have made it even harder to quickly analyze the situation and take effective corrective action.”

For several minutes, the captain used brute physical force to pull the control yoke back up. He became exhausted and asked for the first officer’s help. During the six minute flight, my daughter was terrified riding this roller coaster. At 8:43 am local time, the plane plowed into the ground, in an Ethiopian farm field, and buried itself dozens of feet below the surface.

The plane and the passengers disintegrated into pieces. Their parts were mixed up with the jet fuel. I was there. My family and I were at the crash site. We saw the wreckage. My wife and son saw body parts exposed to the elements.

3. The Boeing 737 MAX 8 Development and Concealment
The MAX is an Obama era plane that was certified to fly in March 2017, the third month of the Trump administration.

1Attachment 3: Testimony of Sully Sullenberger, U.S. House of Representatives, Committee on Transportation and Infrastructure, June 19, 2019 (attached)
It is a deadly aircraft with ill-fitting engines bolted onto a 50 year old aircraft design. Rather than physically fixing the aerodynamic design of the aircraft, Boeing took the cheap route. It used glitchy software that relied upon input from a single sensor to push the nose of the plane towards the ground in certain conditions.

Even today, the FAA still has not resolved the issue of whether MCAS exists to make the MAX handle like prior planes or to resolve aerodynamic instability. Until FAA can answer that question, the MAX should not fly again. It may be that the aircraft is so flawed that physical changes, rather than software fixes, are required. Boeing hid MCAS for many years. In June 2013 the company first devised a plan to conceal MCAS from the public and to minimize its existence for the FAA. It was described as merely “an addition to [the existing] speed trim [system].”

In 2016, Boeing drastically strengthened MCAS’ ability to push the MAX’s nose down. It never informed the FAA or anyone else of this change. Neither Boeing nor FAA performed a safety assessment which was necessary for critical safety systems. In May 2019, then-Acting FAA Administrator Dan Elwell admitted that Boeing and the FAA failed to designate MCAS as a safety critical system.

The MCAS violated Boeing’s internal requirements requiring that the systems should “not interfere with dive recovery” and “not have any objectionable interaction with the piloting of the airplane.”

The effort to hide MCAS continued throughout 2016 as the FAA allowed Boeing to remove references to MCAS from Boeing’s Flight Crew Operations Manual. The company wanted to avoid simulator training. In November 2016, Boeing chief technician pilot Mark Forkner wrote to a colleague that he was “jedi-mind tricking regulators into accepting” lesser pilot training.

One Boeing employee rejoiced when the FAA said there should only be computer-based training, without a simulator. “You can be away from an NG for 30 years and still be able to jump into a MAX? LOVE IT!! ... This is a big part of the operating cost structure in our marketing decks.”

In 2017, a Boeing employee wrote, about the MAX, “This airplane is designed by clowns, who are in turn supervised by monkeys.” In 2018, another employee wrote “I still haven’t been forgiven by God for the covering up I did last year.”

The FAA’s years long drive to delegate everything and relegate staff to paper pushers and presentation watchers resulted in Boeing employees mocking them as “dogs watching TV.” The FAA remains happy to be sidelined, rather than have direct involvement in certification.

4. Between the Crashes: What were they doing?

After the Lion Air crash, FAA knew that MCAS was a problem, but failed to ground the plane. They blamed the pilots for not winning the fight with the then-secret MCAS system.

One can argue whether the FAA and Boeing should have known about the aerodynamics issues, the AoA sensor and MCAS’s catastrophic risks before JT610. But after JT610, there is no excuse.

On December 3, 2018, the FAA’s internal risk assessment projected that there would be at least 15 more MAX crashes without a fix. The agency did not require Boeing to fix the problem but instead issued an Airworthiness Directive that still did not disclose the MCAS. Rather it re-iterated the procedure for handling runaway trim, which Captain Sullenberger said was very different. American Airlines pilots, in a meeting with Boeing, complained that the company hid MCAS from them.

But secretly the FAA asked Boeing for a software fix within 10 months. My daughter died in the ET302 crash before the 10 months were up. They gambled with her life, and we lost. As did 156 others on the plane.

Even in December 2018, Boeing was falsely reassuring the FAA that pilots could handle MCAS failures. In a slide deck obtained by the House Transportation and Infrastructure Committee, Boeing told FAA that:

• repeated MCAS activation were readily recognizable and able to be counteracted;
• the action to counter the failure should not require exceptional piloting skill or strength;

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3 Id.
4 Id.
5 Id.
6 Attachment 4: Boeing slides prepared for FAA, December 18, 2020, obtained and publicly disclosed by U.S. House of Representatives, Committee on Transportation and Infrastructure.
• the pilot will take immediate action to counter; and
• trained flight crew memory procedures shall be followed.

(See attached Boeing slide deck from December 18, 2018, page 11).

There was no evidence that pilots could react immediately. In fact, Boeing own analysis revealed that if pilots took more than 10 seconds to react, the result would be catastrophic.7

5. FAA Resistance and Denial Continues

To this day, the FAA has not admitted any mistakes. Instead, it strategically shifts the focus to its US-centric history of no recent crashes despite the international reach of America’s aviation system. My family hoped that new Administrator Steve Dickson would show leadership and clean up the agency. But he has not. No new management team has been chosen. Nobody who made mistakes has been disciplined. Transparency is proclaimed in words but not by deeds.

Administrator Dickson, Deputy Administrator Dan Elwell and others promised that families would receive answers to our questions and be informed of the agency’s actions as it determines whether and when to unground the MAX. We received no documents when we asked for them.

We were then told to submit a Freedom of Information Act (FOIA) request. We did so on October 28, 2019. But the FAA has still refused to provide us with any documents in response to that request.

A passenger advocacy group, Flyers Rights, requested information pursuant to FOIA, about the data and analysis surrounding whether and when to return the MAX to service. FAA refused to provide the information. Flyers Rights went to court seeking an order requiring the FAA to provide the information. The FAA has had every legal tool in its arsenal to prevent disclosure of the documents requested.

On August 1, 2019, my wife Nadia and son Tor met with FAA Safety Director Ali Bahrami who previously worked for an aviation industry lobby group. He was a substantial part of the FAA’s “blame the pilots and leave Boeing alone” approach. Bahrami never admitted to my family that the FAA made a mistake by not classifying the MCAS as a critical safety system. When my son asked if there was anything he would do differently, he said “no, they did everything right.”

Having been denied information and assistance from the FAA, we searched for answers on our own. We learned from Boeing engineers that the change from Designated Engineering Representative (DER) to Organization Designation Authorization (ODA) was a clever and opaque bureaucratic alphabet soup method to hamstring the safety culture at Boeing.

Under DER, the FAA appointed, supervised and removed the Boeing engineers that were designated with certification authority. Boeing paid the engineers, but the DER reported both to FAA and Boeing. That dual chain of command prevented the profit and timeline pressures of Boeing managers from overruling safety concerns. That safety culture changed when FAA changed to ODA and Boeing was designated as an organization with certification authority. The Boeing engineers, now called ARs, were isolated from their FAA counterparts, reporting only to Boeing managers. Boeing engineers with safety concerns could be shut down and reassigned if company profit or timeline goals were threatened.

While it is easy to lose the thread among the acronyms, this organizational culture and chain of command dynamic must be grasped and fixed. Boeing engineers told me that the DER system resisted undue influence while the ODA system invited undue influence.

The Joint Authority Technical Review, composed of international aviation agency experts, found that “there are signs of undue pressure on [Boeing engineers] performing delegated functions”9 Congress needs to re-establish the direct communication between FAA and Boeing engineers at the ground level. FAA also needs to be able to appoint, supervise and remove those Boeing engineers so they cannot be subject to undue influence from Boeing managers to compromise safety.

The Joint Authorities Technical Review report also found dozens of faults with FAA’s certification process. It found, for example, that the FAA’s Boeing Aviation Safety Oversight Office (BASOO) office is simply not equipped with the quantity and quality of personnel that can oversee Boeing. FAA has not responded to that report.

The FAA will continue delegating to Boeing unless Congress stops it from doing so.

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7The Boeing 737 MAX Aircraft, supra at 9.
In March 2017, the FAA released a report called “A Blueprint for AIR Transformation”. Dorenda Baker, Executive Director of the Aircraft Certification Service, signed the document.

The AIR Transformation report is a blizzard of management consulting words conveying aspirations towards communications with stakeholders, innovation and strategic vision. But the core of that report was intended to continue getting FAA out of the business of direct involvement in critical paths of the certification process. Three unions—PASS, NATCA and AFSCME—wrote a dissenting report showing how the FAA’s paper-pushing, management consulting approach compromises the safety of aircraft passengers.9

The FAA’s core vision is apparently to push paper and watch power point presentations compiled by Boeing. The public expects FAA to engage in direct involvement, acting as the check on an aircraft manufacturer’s urge to cut corners to save a buck.

The FAA currently shows no intention of freeing itself from capture and directly engaging in certification functions rather than merely pushing paper. A recent Special Committee report of hand-picked industry insiders issued a January 16, 2020 document that copied and pasted past FAA talking points about delegation and its long and safe history.10 Unsurprisingly, FAA agreed saying that “the delegation system allows U.S. industry and innovation to thrive”.11 Nobody—except FAA and its handpicked insider committee—believes that this version of delegation is fine. Congress must be very specific in demanding more direct involvement by FAA in the certification process because FAA will not otherwise do it.

The October 2019 JATR report, appointed by FAA, found dozens of problems with FAA’s delegation process and the certification of the MAX. FAA has not responded to the JATR report, apparently choosing only to respond to more friendly reports.

I have also been told by inside whistleblowers that Boeing did not engage in safety assessments of critical systems beyond MCAS in the MAX. Safety assessment is an analysis of the identified hazards for a system and demonstrates compliance with airworthiness regulations. Congress should require FAA to disclose the safety assessments for all critical systems in the MAX before it is allowed to fly again.

6. Legislation needed

ET302 victims families were very disappointed at the lack of substance in the first draft of legislation filed in the Senate this month. The second draft filed recently is improved in that it obligates FAA to appoint, remove and communicate with Boeing engineers performing certification work. It also protects whistleblowers throughout the supply chain.

While the recent legislation filed by the Chairman and Ranking Member improves on a prior version of the bill, this second draft is not yet supported by my family. We believe that other ET302 families also oppose it without many more improvements. The legislation must also include:

1. Rebalance of delegation. It is absolutely critical that excessive delegation is fixed. FAA must not be allowed to slump further into paper-pusher status, distant from Boeing engineering and the plant production floor.

   FAA must retain direct involvement in critical safety systems—as well as novel and new systems—and not delegate its functions to Boeing. Critical safety systems are those deemed major, hazardous or catastrophic. FAA must verify that the fault tree analysis and other analysis are performed to guarantee redundancies and fail safes to prevent failure. New and novel systems are, like MCAS, those not included on aircraft and not fully tested in the past.

2. Lifetime limit for type certificates. The Boeing board, including current CEO David Calhoun, rejected the option to develop a new aircraft to compete with Airbus, opting to amend the old 737 model. They did so to cut corners, save money, extract profit from legacy product, and avoid many current FAA safety rules. The original 737 was certified in 1967. Fifty three years later, it is clear that it should no longer have modern engines and software bolted on to its old fuselage. Boeing should have chosen innovation rather than profitable but unsafe stagnation. A lifetime limit on type certificates should be mandated, and no more future aircraft designs should be based on the 737.

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3. **FAA certification should not equal immunity for Boeing.** Boeing management may bow their heads and express sorrow for the crash. But in private they are doing everything possible to prevent families from holding Boeing accountable. Boeing management, in court, that the fact of FAA certification pre-empts families from making claims for the loss of our loved ones. Boeing’s conduct should not be awarded with immunity. This bill should make clear that FAA certification is the bare minimum that manufacturers like Boeing should meet. While I hope no family has to experience the loss of a loved one in a plane crash, legislation should preserve the right to hold all responsible parties accountable.

4. **End the secrecy.** The National Transportation Safety Board (NTSB) and the FAA have invoked every possible law to prevent families, Congress and the public from receiving information about the causes of the crash and the future ungrounding analysis. The NTSB has prevented the release of many documents held by Boeing. The FAA has refused to comply with families FOIA requests citing expansive caselaw protecting company claims of confidentiality despite the public safety concerns. The result is zero production of documents to the public. This Committee should substantially narrow the scope of legal provisions that hide documents, data and analysis relating to a crash from the public.

5. **Penalties must apply or new law does not matter:** Boeing has paid civil penalties in the past, but that has not stopped the company from misleading the FAA, pilots and the public. The company pays the penalty from general funds and goes about generating more profit. Criminal penalties with the threat of jail time have the needed deterrent effect for individuals who must then invoke their personal morality rather than company goals.

6. **Implement the JATR recommendations.** The FAA refused to respond to the Joint Authorities Technical Review report which it commissioned. The international participants in the report were not cozy industry insiders and therefore produced a solid set of findings and recommendations. FAA can congratulate itself for safety. But the public does not trust it and foreign aviation agencies are not deferring to it any longer. This committee’s bill should require the FAA to implement the recommendations in the JATR report.

Thank you.

**Attachments**

The attachments referenced below can be found on the govtinfo.gov website.

1. FOIA letter, Michael Stumo and Nadia Milleron to FAA, October 28, 2019 (pg 10).
3. Testimony of Sully Sullenberger, U.S. House of Representatives, Committee on Transportation and Infrastructure, June 19, 2019 (pp 82–86).
4. Boeing slides prepared for FAA, December 18, 2019, obtained and publicly disclosed by U.S. House of Representatives, Committee on Transportation and Infrastructure (pp 89–131).
5. FAA Quantitative Risk Assessment, December 3, 2018, obtained and publicly disclosed by U.S. House of Representatives, Committee on Transportation and Infrastructure (pg 132).

The CHAIRMAN. There just aren’t any words we can say. In my opening statement, I mentioned several frustrations I had with information requests. Your written testimony discusses this also, so can you describe the current status of your requests?

Mr. STUMO. Our request for further improvement, and we appreciate the movement that has been made so far in the legislation. Our requests are to further rebalance delegation on a substantive level. We appreciate that the FAA under your bill would appoint, remove, and have direct communication with the Boeing engineers responsible for certification, but rebalancing delegation—again, with this whole thing with the JATR report found that the agency wants to reduce direct involvement certification, just push paper.
Instead the Congress must require that FAA do its job with safety-critical systems. That they retain and not delegate authority over safety critical systems. That means not only those determined hazardous and catastrophic if they fail but also major. Because we see that Boeing tried to fit the MCAS into the major category, which isn’t quite as bad as the hazardous or catastrophic, so that it could minimize involvement—minimize many things and push profits.

So safety-critical systems is something the FAA should retain. We should have an FAA red team to look over what the blue team, so to speak, of the manufacturing engineers are doing. Number two is a lifetime limit for type certificates that the MAX was certified the year I was born, 1967. I am 53 and that family is 53. They are trying to cram new engines on an old fuselage, putting new software on old computers that don’t talk to each other, and at some point you got to innovate and make a new plane. And that is before 50 years, maybe 25 years, but at some point you make a new plane and you don’t—you make a 21st century aircraft.

And from Boeing’s perspective, it is so the Brazilians and Chinese don’t catch up to them like the Japanese did to Ford and GM in the 70s. Next, FAA certification as we have seen is flawed. It is not very good in many cases and it should not equal immunity. Boeing apologizes and says they are going to—they are very sorry. We are going to do better but in court they put claims that say we don’t have to pay anything because the FAA certified and that makes us immune. And that is wrong.

And the FAA in other cases has supported that position and I don’t like it and that should change. And that is, legislation should make that clear. Last, FAA and NTSB secrecy must end. Any excuse they can have to not respond, whether it is you know, we are too busy or when they do, that is confidential and proprietary information and you have seen it. When Boeing or these, when they send documents in and they get out the rubber stamp and everything says confidential and privileged, even if it is the dinner menu. And then they all say export control.

And then for NTSB, which is blocking disclosure of documents that happened between the crashes, they see NX13 covers the dinner menu of ICAO. And so at some point this—they are just going to use those privileged and confidential excuses as broadly as they can and there is no penalty for abusing it. And so Congress has to step in and rebalance the public interest. So those are what I would say. Thank you.

The CHAIRMAN. Well, thank you for your testimony. And I am sure you had no intention of becoming an expert in this subject matter, but we appreciate your insights. Senator Cantwell.

Senator CANTWELL. Thank you, Mr. Chairman. And Mr. Stumo, thank you for being here and your wife as well. And again, my condolences to you and all the families who have been impacted by this. And again, my thanks for your continued oversight and communication on these issues because as I said, I have seen with the Colgan Air families that they have made an impact on what we have been able to do on safety.
And so I am sure that you will have the same impact, but nonetheless a very painful experience to continue to focus on these issues. But I thank you. I wanted to go over a couple of things about your testimony to ask further details on. I agree we need the FAA to remain in the driver's seat when it comes to the certification process and that is what that legislation does, as you say, making sure that they have oversight over the employees and the process on a supervisory role and owning the system.

That is what Chairman Wicker and I have also agreed to in the legislation. I was a little—I am not little. I was very surprised to hear that the FAA Administrator not fully support that concept today. Do you have any comments on that?

Mr. Stumo. We have seen a consistent set of reports from FAA, including a 20—I think it was a 2017 air transformation report that is full of, and I refer to it in my written testimony, that is full of management consulting baloney about goals and aspirations. But what it boils down to is a dedicated internal, it appears from the outside, a dedicated internal process that they are going to withdraw from, you know, the direct involvement in certification.

And apparently that includes appointing, removing, and communicating with the Boeing engineers doing a public service with its certification duties. So it seems to be deeply embedded and I was surprised too to see how resistant that the Administrator was to the mere fact that, hey, why don't you just you know, take a look at these folks. They are not appointing the janitor they approved. You can remove if they screw up because we all know people screw up and you make an appointment and you wish you hadn't.

And you have supervision that is going on in between because that is what we have heard from Boeing engineers that have been around in the DER system and the ODA system, that if when you have Boeing appointments and they are siloed only on the Boeing side, the safety culture can get totally overwhelmed by the profit and timeline pressures which always exist, but you have got no one else. You are a Boeing engineer, you have got to respond to the Boeing manager and you don't have the FAA side because you don't even know who they are.

And the BASO office, the Boeing Aviation Safety Oversight Office, has 27 engineers that are supposedly overseeing 1,500 Boeing engineers and all they can do is look at reams of paper that get delivered and put rubber stamps to them. So there is something—you know, delegation has been around a long time, but we got to rebalance it in the way that your bill has stated and so I was indeed surprised.

Senator Cantwell. Well, thank you for that. I also—you know, I agree with you and thank you for keeping, bringing up those numbers as it relates to the oversight office itself. Clearly our bill creates a new office and oversight of saying exactly the right level of expertise and technology oversight that is required. And so hopefully that will be fixed. It is very frustrating to hear the Administrator today not embrace these things as fully because it is very hard for us.

You know, I mean we can pass a law but I mean—and we are going to stay on top of the FAA. I can guarantee you that. So we are going to get the right workforce there. I wanted to ask you, you
mentioned this red team, blue team thing, which I think is comes up in a couple of different ways. You know, this idea of holistic approach. Do you think—I am interested because of what you said about the NTSB.

Do you think that the NTSB and NASA could play a bigger role in the upfront part of the certification process when the type certificate is being considered and these ideas or new technology is being considered? Do you think outside groups like that of experts at the front end of the process can better identify risks?

Mr. STUMO. I think it is very possible. I am going to draw a little bit on what Javier de Luis who lost his sister in the ET 302 crash said. Javier is an MIT aerospace engineer. He submitted testimony today and he has also said, you need to have that—getting a new aircraft designed and developed and certified is a major national event. And it takes—it is something that is, you know, and he is really all hands on deck and he did indeed support the fact of having a multi-agency involvement at the beginning.

And you know, in this case we have a global duopoly of Boeing and Airbus. In our case we have Boeing but you know, it is a public-private partnership but along the lines I understand that Javier had also supported that given his deep knowledge at MIT in aerospace engineering. So I would tend to defer to and agree.

Senator CANTWELL. Right. I see my time has expired, Mr. Chairman. Thank you.

The CHAIRMAN. Tell us again, sir, the name of the author of that paper Javier——

Mr. STUMO. Javier de Luis.

The CHAIRMAN. Alright. And do you have that—do you have his paper with you today?

Mr. STUMO. I know he did submit. I can provide it to the Committee and I think it was submitted to staff.

The CHAIRMAN. So we already have it. So, without objection, it will be placed in the record.

[The information referred to follows:]

737 MAX SAFETY AND RETURN TO FLIGHT

Javier de Luis, PhD

From the onset, the 737 Max has been constrained by design decisions that were made, in some cases, over 50 years ago. As has become well-known, the low ground clearance of the jet caused the placement of the new fuel-efficient, but larger, engines to be moved up ahead of the wing. This creates a lift force on the engine nacelles during takeoff, pitching the nose of the jet up, which can lead to the airplane stalling. To remedy this, Boeing designed the MCAS software system, which actuates the horizontal stabilizer in response to a high angle of attack reading from an external sensor, pitching the nose down and countering the additional lift.

In attempting to incorporate these new larger engines into a legacy design, Boeing was attempting to reap the benefits of new technology (e.g., fuel efficiency), while simultaneously not paying any price for updating the rest of the airplane system. It wanted to keep as much of the "old" design as possible, saving significant development and certification costs. But the new engines didn't fit under the wings, so they moved them, creating an additional problem. They then tried to solve this additional problem by once again trying to reap the benefits of using a (cheaper) software solution, without again paying the price of updating the rest of the airplane system. So instead of running the MCAS software on a computer system designed to modern aerospace safety standards, it decided to run it on the same computer architecture that has been present in the 737's since 1996, consisting of two computer systems, but only one operating during any single flight. So instead of redundant computers
and sensors, with fault tolerance, data validation, voting, etc., the 737 Max ran the MCAS software on a single computer, receiving readings from a single angle of attack sensor.

Boeing keeps attempting to fit a round peg into a square hole. There is nothing fundamentally wrong with wanting to upgrade an airframe (the square hole) to use new engines (the round peg). However, when they realized they did not fit, the answer they choose was to try to fit another round peg (the MCAS software) into the square hole of a 1996-vintage computer architecture.

This pattern appears to be continuing. From reports in the media, Boeing will now modify the 737 Max to use both computers and both sets of sensors simultaneously. While that may produce a slightly safer systems, at a basic level having two measurements means that if they ever do not agree, the pilot will have no way of knowing which one is right. Hardly a good solution.

It has also been reported that if the two sensors do not agree, the computers will be instructed to shut down MCAS. While this would have likely prevented the two recent crashes, it poses another question: what is the impact if MCAS shuts down? Presumably, MCAS is there for a reason. Boeing has never released any data to show conclusively whether MCAS is there to prevent a stall condition from developing, or simply to smooth out the handling of the aircraft during certain maneuvers. If it’s the former, shutting down MCAS could be catastrophic. If it’s the latter, pilots would need to be trained in order to become proficient flying an aircraft with new handling characteristics that are present when MCAS is shut down. And if that is the case, then why have MCAS present at all?

There have been recent reports that European regulators will insist that Boeing eventually incorporate a “synthetic airspeed” measurement into the MCAS logic. Depending on how this is done, it may introduce a second semi-independent measurement (in addition to the angle of attack sensors) that can be used by the computers to decide to activate MCAS. This is a step in the right direction, but without increasing the redundancy across the entire system, it is a small step and will still not make the 737 Max as safe as other modern aircraft. And even so, reports indicate that this modification will not need to be incorporated prior to return to flight. This is unacceptable. Boeing has had over a year to design a solution which addresses the shortcomings of this airplane. It has not done so because it continues to try to cut corners and do what it perceives as being quickest and cheapest, with safety as a secondary concern.

If Boeing wants to use 21st century technology to address technical issues, then we need to insist that it be held to 21st century standards of safety and reliability. It cannot have it both ways.

The CHAIRMAN. There are no other members—Senator Markey, we are told. Yes? Yes, you are recognized, sir.

Senator MARKEY. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Markey, do you have a copy of that document that you referred to, that was not predictive but mentioned the 15 aircraft accidents that might occur?

Senator MARKEY. I think my staff has access to it and we will get it to you, Mr. Chairman.

The CHAIRMAN. OK. Well, let’s put that in the record, without objection.

Mr. STUMO. Mr. Chairman if I could help on that, it is when I submitted my written testimony.

The CHAIRMAN. All right.

Mr. STUMO. It was included in that as well if my exhibits were included.

The CHAIRMAN. All right, so thank you and Mr. Markey, you are recognized.

Senator MARKEY. Thank you, Mr. Chairman, very much, and I want to thank Michael Stumo and to your spouse Nadia for being here today and for your tireless work to put a spotlight on this inexcusable tragedy and the need to reform our broken aviation certification system. And again, I offer my condolences to you for the
loss of your brilliant, accomplished daughter. It was an unfortunate, unfortunate tragedy here that has taken her from you.

But I admire so much what you and your wife have done to make sure that you focus on this issue to guarantee that there is accountability. And that the FAA and Boeing be made accountable. So I thank you so much because never again should we see—have to suffer what you suffered. And I am happy that Administrator Dickson just affirmed Boeing’s legal responsibility for the defective 737 MAX.

Now, we need to guarantee the following cannot block your family’s legal claims in court. So, Mr. Stumo, can you speak further to Boeing’s unacceptable attempts to evade accountability and how can Congress help you all hold this company responsible for its wrongdoing?

Mr. STUMO. Well, I want to say it is not just us, there is 156 others that died in that crash and a lot of other families have been very active in their home countries, in Canada, in Europe, the French, German, and Norwegian, Swedes, in Africa, Ethiopia, Kenya, Rwanda. Many families have their own individual hurts that they are trying to recover from.

So I am a bit uncomfortable just having the focus on me, but we are in the U.S. and under COVID we are in Washington but there is others that are doing a lot. But you see on from our perspective we see a dichotomy between public actions and words and private behavior, where you have Boeing repeatedly tell the camera that they are very sorry, Muilenburg, Calhoun, the new CEO who was around during this whole era of certification of the MAX and made the decision against—was on the Board of Directors when they made the decision against developing a new plane and extracting more value out of the aged 737 family.

But they apologize in public. Say we are sorry. We are going to look into it. We are going to be making some changes and you know, we are working diligently to, you know, compensate and to make everything right. And then you look in the documents and they have, you know, they say, no we don’t have to pay anything because the FAA certified it and that means the family doesn’t have their own claims. It is just not right and they know it. That is why they didn’t say it in public, they only said it in private.

Senator MARKEY. So, what from your perspective, again, should everyone who is watching this hearing know about the families and the accountability you want from Boeing on this issue?

Mr. STUMO. Boeing has a responsibility to produce safe planes. They are a great company with a great history that has lost its way with chasing profit and value engineering and getting rid of engineers and getting rid of talent over the time to extract profit and delivering it to shareholders, stock buybacks, and executives.

We need to have, you know, as a national championed company for the U.S., they have got duties to America. They have got duties to passengers. They have got duties to us and they could have made a great 21st century plane. They didn’t. The FAA has to do its job and not be a paper pushing agency, not be dogs watching TV.

I am concerned that the SMS safety management system that sounds like a decent idea is not directly on point, that will fix the
fact that the FAA is not directly involved in certification. That it is more paper to push. And when you have a company that is dedicated to misleading and hiding things, that they will mislead it and hide it in the paperwork when you are not onsite. So that is what I think.

Senator Markey. So when you talk to the Boeing officials, if you have talked to them or your lawyers have talked to them, how would you characterize their response back to you?

Mr. Stumo. Well, we don’t talk to them much because we are all represented. But I just—I saw, you know, a lot of times Boeing would apologize to cameras about what happened but various—but only once when shamed in doing it did Muilenburg actually turn to the families and say he was sorry. And Calhoun has not talked to us but they haven’t apologized to families, they have only apologized to cameras. But we haven’t talked to many Boeing executives.

Senator Markey. So what does that tell you that they are unwilling to actually apologize to the families?

Mr. Stumo. It is always a concern that it is just a PR management issue.

Senator Markey. Meaning?

Mr. Stumo. It is not real.

Senator Markey. It is not real. They speak to cameras, but not to families. Meaning they just need some public statement that kind of satisfies the minimum requirement that they say that they are sorry, but they don’t want to actually have to meet with the families themselves in order to have that kind of—an accountability?

Mr. Stumo. Yes. You know, Ethiopian Airlines CEO sent all the families a letter of sorrow and an apology early on. Ethiopian Airlines has done a lot of other things wrong. Boeing didn’t do what they could have. When I need to apologize to my wife, I don’t do it to a camera and I don’t do to somebody else. I do to her and that is how you do it in human society.

Senator Markey. Yes, so, you know absolutely they are— they have been irresponsible and they are clearly engaged in a systematic cover-up and our job will be to help you to make sure that every single piece of information is made available publicly so that we guarantee that this spotlight is so bright that we will not ever have to see a hearing like this have to be conducted. But not until we have collected all of that information.

Not until Boeing is made accountable in court will we in fact know that we have done our job for you and for all of the families, Mr. Stumo, and we thank you for being here today in order to make sure that the voices of the families are heard. Thank you so much for your willingness to do this.

Mr. Stumo. Thank you.

Senator Cantwell [presiding]. Senator Blumenthal.

Senator Blumenthal. Thank you. Thank you, Senator Cantwell. Thank you for being here today and on so many other occasions lending your voice and face to this reform effort not just in memory of your daughter, but to save other lives. And to you and all of the families that have lost loved ones, this committee has an obligation not only to express condolences but to put our action where our
mouth is and really adopt reforms that, in fact, will prevent these kinds of tragedies in the future.

You were here to hear Administrator Dickson, and I am just going to go through your testimony. On the rebalance of delegation, you may have heard my question about the FAA taking back the delegation at the very least of involvement in critical safety systems. Were you satisfied with the answer that he gave?

Mr. STUMO. No. No, there seemed to be an unwillingness to do so and it seems wrong. I mean we have got to have the red team involved with systems that are deemed major, hazardous, or catastrophic if they go bad. We can’t just rely on the internal checks and balances of a manufacturer depending upon the vagaries of what CEO is in charge or what Boeing manager is in charge or who is on duty at the time.

Senator BLUMENTHAL. On the issue of lifetime limits for type certificates, I think you may have said to me at one point during our private conversations that right now in effect they can bolt a new system onto an old fuselage and just slide it through for certification. Were you satisfied with the answer that he gave me when I asked about limits on the lifetime of certificates?

Mr. STUMO. No, there needs to be a lifetime—they need to figure out a lifetime limit and it is more than the MCAS in this system. There is a lot involved because they didn’t have a flight crew alert system that like those that were required in aircraft since 1982, the kind of flight crew alert system, which has red, blue, or red, yellow, and green lights all in one place that you can prioritize things that may or may not be going wrong. In this case because the MAX was an amended type certificate, one of many in this old fuselage, they had this whole cacophony of stick shakers and pull up and pull up and going too fast and going too slow.

Sully Sullenberger described it very adeptly in his testimony before the House where he had a hard time pulling out of this thing and they are trying to describe it as just, you know, run away trim. So the reason they have those rules from 1982, which was when this MAX was 25 years old and now 28 years later they don’t have it, is because they grandfathered in old tech when they have, you know—when new safety regulations come into effect, these new aircraft, it is a method of skirting it apparently.

Single string rudder controls, you know, various parts of the plane get grandfathered in but 28 years ago you had to have a flight crew alert system. Maybe that would have made the difference in alerting this crew what to pay attention to instead of shocking them with all kinds of conflicting alerts.

Senator BLUMENTHAL. And I think on the other issues that I asked him that are in your testimony on FAA certification in effect equaling immunity for Boeing, the culture of secrecy that we see, I think you would agree that his answers were totally unsatisfactory.

Mr. STUMO. Well, the answer has always been on secrecy. The transparent—we will be very, very transparent. We have heard it as family since the beginning and we haven’t even gotten one document.

Senator BLUMENTHAL. And neither have we. No meaningful documents, at least in response to my questions. So I can pledge to
you and I think others in the Committee will join me in this view that the bills now pending can be greatly strengthened and improved. I have offered one. The Ranking Member and Chairman have offered another. I think theirs is very commendable in the progress that it reflects.

I am going to be offering amendments to mine and theirs in the mark-up, I hope there will be one, that would in effect require a take-back in delegation on those critical safety systems, require more transparency, require an end to preemption so that families have their day in court so that the courthouse doors are open to them in spite of FAA certification, require that other even stronger reforms be adopted.

I think your testimony and your work on highlighting how the FAA has become a captive of the industry, how it has become in effect, as you say, a dog watching TV, how it has enabled the industry to put profits ahead of safety. All those points that you have made and all the work that you have done, I hope will have an impact on this committee. And I think what is needed is really radical far-reaching reform. The public demands it and the industry has reached a crossroads, a real turning point and it has choices to make.

But I think Congress can no longer leave those choices exclusively to the industry. I think that voluntary compliance, delegated certification are going to be a thing of the past. And I want to thank you for your being a whistleblower and a watchdog, which is what we need. We need in effect in this system an institutional watchdog, not a lap dog. So thank you very much to you and your family for all the work that you have done. Thank you.

Senator CANTWELL. Thank you, Senator Blumenthal. Mr. Stumo, I want to follow up on a couple of things just quickly. I do have to run and vote in a minute, so if you see me dash out, it is because I think there will probably be holding it just until I get there.

And so I did want to ask, we also introduced a bill with Senator Moran today about the standards that we would like to see on an international basis and you mentioned Captain Sullenberger a couple of times so I wondered if you had given any thought to this larger issue of how do we make sure that the pilot—definitely need the FAA system improved but also want pilot standards to be there and if you had given any thoughts about that.

Mr. STUMO. Yes, sure. You know aviation—the U.S. Aviation system is inherently global. The Boeing planes are sold everywhere, you know, families are riding everywhere and you know it used to be FAA rules were a gold standard. But certainly how do you, you know, how do you have, to the extent we improve here, how do you know rightly have an extraterritorial reach to what we do? I mean certainly the human factors approach and I would like to be—on the human factors, it is all about not excessive reliance on the human, which is fallible to be the last, you know, last chance before as one said, a smoking hole because you need the machine to be hardened and have redundancy in hardening.

So you are not, you know, I am going to make five mistakes before I go to bed tonight. And pilots make mistakes too. They have bad days. You can't rely on that. So you got to have the machine right too but I guess I am in favor of doing as best we can to have
an international reach for the bill, the Flight Aviation safety systems in Ethiopia and Kenya. And I think our Kenyan and Ethiopian families would agree. It is not that great and so that generally I would be supportive.

Senator CANTWELL. Thank you, Mr. Chairman. I got to run.

The CHAIRMAN. Thank you, Senator Cantwell, and thank you all. If there are no other questions, then we will move to close the hearing. The hearing record will remain open for two weeks. During this time Senators are asked to submit any questions for the record. Upon receipt, each witness is requested to submit written answers to the Committee as soon as possible.

So thanks to both of our witnesses and thanks particularly to you, Mr. Stumo. We very much appreciate your insights and there is just no way to express our condolences adequately. With that, this hearing is now adjourned.

[Whereupon, at 12:46 p.m., the hearing was adjourned.]
CURTIS EWANK
Renton, WA
June 5, 2020

U.S. Senate Committee on Commerce, Science, and Transportation,
Washington, DC.

Dear Senate Commerce Committee,

I am writing in advance of the June 17th hearing with FAA administrator Steve Dickson to express my concerns regarding the 737 MAX, the FAA’s handling of the process, and other important information related to aviation safety. I do this as a private pilot, and a flight deck engineer with experience at Boeing during the development of the 737 MAX who has shared these concerns with the company, the FBI (at their request), and the House Transportation Committee via Mr. Doug Paternak, after Rep. DeFazio read about my internal ethics complaint in the Seattle Times article “Boeing rejected 737 MAX safety upgrades before fatal crashes, whistleblower says.” The safety of the public is paramount, and developing regulations and processes that adequately protect that safety is a complex process. That complexity stems from the nature of the pilot’s task of integrating an understanding of automated functions and the aerodynamic state of the airplane; a pilot uses everything from indicators, control force feel, “seat of the pants,” prior experience, and training to develop appropriate responses to whatever situation arises. Ensuring safety in this environment requires a holistic, scientific approach to ensure each pilot is presented with a consistent, salient flight deck and airplane.

The 737 MAX was not originally designed and certified with that approach. The 737 MAX’s original certification was accomplished with hand-waving and deception to hide the numerous ways the 1960s-era design of the 737 does not meet current regulatory standards or a modern concept of aviation safety. The Boeing Company bears the majority of the responsibility for this deception against the public, but the FAA is also responsible for allowing such reckless disregard of regulations and aviation safety.

This disregard is flagrant; with a practical understanding of the pilot task and detailed knowledge of Boeing design philosophy and history it is an unavoidable conclusion. Airplanes are complex systems, and such knowledge-in-depth is required to fully understand the practical effects of the certification process and regulations. Unfortunately, many of the high-level decision makers and representatives of Boeing and the FAA do not have this working knowledge; they get their information through extended chains of command that end up working like the children’s game of “Telephone.” As a result, these representatives have given incorrect information and even outright lies to Congress, further complicating attempts to implement the lessons learned from these tragic accidents.

An excellent example of the way this working knowledge is misapplied at a high level is the recent DOT advisory committee report. One of the report’s conclusions was that if the 737 MAX had been certified as an all-new jet, it “would not have produced more rigorous scrutiny . . . and would not have produced a safer airplane.” This conclusion is utterly incorrect, and combined with the conclusion that the ODA system can remain largely intact, is horrifically bad advice. By failing to understand how having the 737 MAX merely meet existing regulations would improve aviation safety the DOT advisory committee actually poses a serious threat to aviation safety and the flying public. These conclusions show the committee is not working in the public interest. For that reason, its conclusions should be disregarded and the committee disbanded.

Allow me to provide several explanations of important regulations and their implications to demonstrate that the DOT advisory committee’s conclusion that an all-new jet certification would not have resulted in a safer airplane is false. In general, if the 737 MAX had stepped up to a full version of FAA regulations it would have
resulted in a safer airplane as indicated by a reduced chance of crew error, greater chance of finding the possibility for that error during design, and creating a flight deck “more conducive to coherent thought” in the scenarios Lion Air 610 and Ethiopian 302 encountered.

The specific areas are:

- The new 25.1302 regulation. This regulation was created in conjunction with the European Aviation Safety Agency for the purpose of evaluating flight deck systems for potential crew error. This would be an extensive evaluation for a completely new aircraft type that would help ensure aviation safety. However, as the 737 MAX was an amended type certificate, Boeing argued that according to the changed product rule it only had to evaluate changed systems. As Boeing was also trying to change the flight deck as little as possible to minimize training differences, this certification tactic severely limited the range of human factors evaluation of 737 MAX systems. MCAS design was a victim of this “slice and dice” approach; crew interfaces for Air Data were unchanged and Autoflight only had minor changes. Boeing CEO Dave Calhoun was correct when he admitted that assumptions about crew reaction time for MCAS failures were wrong, but there were many places where those system interactions should have been analyzed but were not due to the means of compliance granted to Boeing for its amended type certificate. This lack of analysis reduces the overall safety of the 737 MAX as compared to a newly developed airframe. And this use of the changed product rule to avoid scrutiny on unchanged systems is enormously important to the future of aviation safety—the changed/unchanged system line on the 777X is even more convoluted and involves more complicated systems than the 737 MAX.

- The 25.1322 Crew Alerting regulation. Boeing sought and was granted a complex exemption to the new version of this regulation. The newest amendment level of 25.1322 essentially requires what Boeing calls the Engine Indicating and Crew Alerting System (EICAS), a system designed with the latest understanding of human factors to present information to flight crews and prompt appropriate reactions in critical scenarios. The 737 does not use this system; it relies on crew alerting methods developed two decades prior to EICAS that have known flaws when compared to EICAS. These flaws were known to Boeing as it worked with the FAA to certify the 737 MAX, and awareness of this was creatively hidden or outright withheld from regulators during the certification process. Here are some examples of these flaws:
  
  - Lack of an ability to suppress the aural component of the Overspeed Warning. EICAS design requires the Warning level of alert, which requires immediate crew awareness and response, to have two attention-getting senses. These are typically sight, with a light, and sound, with a tone. Historically the aural components were continuous as long as the alert condition persisted. However, after the crash of Birgenair 301 in 1996, Boeing pilots and engineers decided a means of acknowledging and canceling an aural alert was necessary to prevent crew distraction in critical troubleshooting times. All Boeing models, except the 737, gained this capability through EICAS. The 737’s older system was not updated due to cost. On Ethiopian 302 the overspeed aural was sounding continuously during the last minutes of flight.
  
  - The ambiguous Autothrottle Disconnect alert. FAA regulation 25.1329(k) requires the Autothrottle Disconnect alert on the 737 is a red flashing light with no aural which does not fit any of the standard alert definitions (or 25.1329(k), which is notably absent from 737 MAX cert plans). The Autothrottle Disconnect alert also shares the same physical panel space with an Airspeed Deviation alert that illuminates the same light flashing amber. Confusion between these two alerts has led to incidents in the past. During 737 MAX certification EASA requested information about known incidents and Boeing management withheld information responsive to their request.
  
  - The now-infamous AoA Disagree alert. Boeing has acknowledged the alert was not properly implemented on the accident aircraft, but both Boeing and former FAA acting administrator Dan Elwell have asserted that the alert was not essential to the safety of the airplane. That assertion is grossly incorrect—documentation of the alert’s development in 2005, after a series of incidents where AoA vanes stuck at a stop on takeoff, clearly states that the alert was made basic for safety, so that flight crews could better understand the disparate effects of a stuck AoA vane. This outright deception about the ra-
tionale for the alert after two fatal accidents is not the only unfortunate aspect of this alert. On EICAS airplanes, air data disagree alerts are Caution-level, with an aural to provide immediate awareness to the flight crew of the condition. There is no Caution aural on the 737, so an AoA Disagree alert will only be picked up during the flight crew’s instrument scan, which could delay awareness of the alert for a critical amount of time. In a highly speculative thought experiment, consider the potential accident sequence had the two accident airplanes been equipped with the alerting system required by current regulations. AoA Disagree would have annunciated shortly after takeoff with an aural for immediate awareness, prompting the crew to appropriate action—in this case the Airspeed Unreliable checklist. The first memory item step of Airspeed Unreliable is to keep the airplane in its current configuration, i.e., do not change the flap setting. Crucially MCAS is not active with flaps down (which is normal takeoff configuration), so a fully-functional alert combined with the required alerting system may have been able to give the crew enough awareness to avoid MCAS activation altogether. Boeing’s and the FAA’s deception around the rationale for the development of this alert should be highly suspect.

- Air Data system design. The 737’s air data system architecture is a carryover from the days when airspeed and altitude instruments were hard-plumbed with tubes from the pitot and static ports. On the 737 NG and MAX, pitot and static data is transmitted over databuses to computers and then displayed on each pilot’s forward display. Even though the computers are theoretically capable of switching data sources, the 737 has no means for the flight crew to do this, unlike every other Boeing model. This capability is strangely not required by FAA regulations, even though studies in the wake of Air France 447 demonstrated the importance of pilots being presented with correct aircraft state data, or the means to select correct data should displayed data be erroneous. I specifically advocated for a system that would have enabled this on the 737, synthetic airspeed, but upper management shut down the project over cost and training concerns. The known unreliability of air data, due to the potential for erroneous data caused by external factors, makes the initial design of MCAS simply unacceptable. The importance of error-checked sensor inputs to automatic functions is well known and should have been thoroughly incorporated into an understanding of aviation safety after Turkish 1951.

These three areas, not to mention numerous others related to control forces being too high in certain flight control modes and the relative authority of the stabilizer, elevator, and the pitch-up moment from the engines, demonstrate that had the 737 MAX been certified to a full set of FAA regulations it would have been a safer airplane merely by entering the market with the most up-to-date understanding of system design and critical human-machine interfaces. Current FAA regulations require this understanding; during development of the 737 MAX Boeing sought ways to rationalize not updating the aircraft systems to that level, and the FAA permitted it to do so. The result is 346 lives lost.

I have no doubt the FAA and lawmakers are under considerable pressure to allow the 737 MAX to return to service as quickly as possible and as soon as the public MCAS flaw is fixed. However, given the numerous other known flaws in the airframe, it will be just a matter of time before another flight crew is overwhelmed by a design flaw known to Boeing and further lives are senselessly lost. These design flaws and the systemic problems that allow them to threaten the public must be fixed before the 737 MAX is allowed to return to service.

I left my job at the Boeing Company in 2015 in protest of management actions to rationalize the poor design of the 737 MAX. I did not think I could do my duty as an engineer to protect the safety of the public in the environment created by management at Boeing. In 2018 I returned to the company, and quickly witnessed the nightmare of the very accidents I had tried to prevent happen in real life. Prior to my departure in 2015, my manager argued against the design changes I wanted to make by stating, “People have to die before Boeing will change things.” The time for change is now. The country is grappling with a wide range of issues at the moment, but the reduction in travel demand provided by the COVID–19 pandemic gives us time to adequately repair the aviation regulation system before new airplane designs are required.

I recommend the following actions:

- A thorough revamp of all FAA regulations to ensure they reflect a modern understanding of computer technology and human-machine interfaces.
• A thorough revamp of the manufacturer-FAA certification information pipeline. The current ODA process allows Boeing to hide information it doesn’t want the FAA to know via management pressure. Boeing is working on developing aircraft using a “digital twin” system that allows digital models to be evaluated for design suitability prior to actual hardware build. The FAA should develop the means to evaluate these models for regulatory compliance and require Boeing to submit them at multiple stages of the design process to ensure no compliance information is hidden from the regulator.

• As a near-to-final certification step, the FAA would conduct a battery of system tests on actual hardware at its own facility to ensure the final aircraft design complies fully with regulations.

• Create a system where ethical concerns about designs can be evaluated independently of the Boeing Company. In other engineering disciplines there exists the Professional Engineer (PE) certification, which puts an engineer’s license on the line when they sign off on designs. There is not an Aerospace PE, and the decision to sign off on any particular design at Boeing has been culturally expropriated from the engineers to management. Aviation safety would be better assured if ethical concerns about designs were evaluated by an independent expert panel rather than internal Boeing corporate counsel seeking to protect the company from liability.

• These recommendations create a requirement for a significant amount of technical knowledge in the FAA. If the FAA prefers to remain focused on finding regulatory compliance only, it may be better to perform these tasks in a separate public institution such as a NASA center or National Laboratory. Such a technical center focused on end-to-end evaluations of automated and human interfaces with automated systems would have public safety benefits beyond aviation, potentially anywhere from evaluation of NASA Commercial Crew vehicles to working with NHTSA to ensure systems like Tesla’s Autopilot are in line with the best scientific understanding of how to operate complex systems in high-risk environments.

It is not possible to say that the current commercial airplane certification process can ensure the safety of the public to the best of our ability without reforms such as these in place. The 737 MAX should not be recertified until such reforms are made and all known technical flaws with the airframe are corrected. In fact, if the FAA was truly regulating in the public interest, it would take action against Boeing for its continued deception and gross errors in the design and production of the 737 MAX by withdrawing Boeing’s production certificate. That certificate can be restored once Boeing and the FAA have sufficiently revised their processes.

Thank you for your time, and for being willing to seriously re-evaluate and restructure the aviation safety system in this country. If you would like to contact me for further discussion, you can reach me via the provided information.

Sincerely,

CURTIS EWANK.
odology (TARAM) after the first crash. It's hard to call the second crash an accident when it was already forecasted, but profit margins were at risk and lives came second.

The FAA publicly made false promises to keep the ET302 families informed and to remain transparent. Instead, they continue to stonewall families, while maintaining and prioritising their cosy relationship with Boeing.

Administrator Steve Dickson has failed to identify, hold accountable, and discipline those who were responsible for the mismanagement of the Max certification. Our loved ones lost their lives, we lost them, and not a single individual has lost so much as a penny of their from their paychecks. Instead of the FAA cooperating to protect lives, they remain complicit in risking them to protect a corporation.

Bereaved families have appealed to Chairman Wickers and committee members to address the freedom Boeing has been given by the FAA, to profit at any cost without taking any responsibility.

Chairman Wicker introduced The Aviation Safety Improvement Act of 2020, which is just a protection ploy for Boeing. Does not require any correctional actions, but ratifies the same framework that resulted in my father's death. It's chilling that Chairman Wicker's Act implies that merely investigating issues is sufficient.

We appeal to the Commerce Committee to refuse to be complicit in more families losing their loved ones, while corporations continue to line their pockets. To choose to protect the people they represent and to honour the memories of the 346 lives lost. What will it take the loss of a thousand or thousands of lives before real action is taken to protect the public?

The Commerce Committee has the opportunity to pioneer real change in Aviation Safety. The ET302 families are counting on you to take the action required to ensure that the history doesn’t repeat itself.

Thank you.

Best regards,

ZIPPORAH KURIA,  
Daughter of Joseph Kuria Waithaka.

10 June 2020

Committee on Commerce, Science and Transportation  
United States Senate  
Washington DC, 20510

“Forwarded on a Without Prejudice Basis”

Dear Committee Members,

RE: DEFECTS AND DEFICIENCIES IN THE AIRCRAFT SAFETY IMPROVEMENT BILL OF 2020

I write to you on behalf of the family of George Wanderi Kabau, a cheerful and highly safety conscious young man who suffered wrongful death before his prime due to the very avoidable Ethiopian Airlines Flight ET 302 crash on the nasty morning of 10 March 2019.

Our family has a very legitimate and valid basis to express our utter disappointment with the proposed Aircraft Safety Improvement Bill of 2020, as we lost our beloved George Kabau due to the callous negligence, recklessness and deceitful actions of a United States corporation and regulator, which resulted in the manufacture, certification and sale of a fundamentally defective Max 737 passenger jet. In particular, you, as Members of the Committee, are bestowed with the magnificent duty of safeguarding the future safety of the flying public, not just for Americans, but for the entire world by proposing and endorsing adequate legislative interventions. If you neglect your duty, may you know that unsafe flights will be a threat and trauma to everyone, including yourself, and your families and friends.

Before delving into the deficiencies and defects of the proposed legislation, it is fitting that I summarily contextualise the regulatory and safety issue at hand. As you are all aware, the wrongful deaths of George Kabau and 345 others (from both Flight ET 302 and the earlier Lion Air crash in Indonesia) would never have occurred if the Federal Aviation Administration (FAA) undertook its regulatory duty
rigorously, competently and honestly. Our loved ones who perished would be with us today if there was no deliberate misrepresentation and concealment, by both the Boeing Corporation and the FAA, of the stalling risks of the fundamentally unstable passenger jet that relied on an inherently catastrophic and defective Maneuvering Characteristics Augmentation System (MCAS) software that obtained data from an unreliable and unsafe single angle of attack sensor. It is needless to state that the Ethiopian Airlines and Lion Air crashes exemplified a callous culture of regulatory capture at the FAA, and the resultant negligence, sloppiness and cosiness rendered it totally incapable of curbing Boeing's corporate recklessness and disgraceful prioritisation of profits over safety in the manufacture and marketing of the 737 Max passenger jets, among other aircraft varieties.

George was a highly disciplined and focused 29 years old Electrical Engineer with immense potential and promise. He believed in and lived by the tenets of hard work, honesty and service to the community, and was passionate about his work at General Electric Healthcare. George's life, ideals and dreams were taken away by the shameful corporate greed, deceit and recklessness of Boeing that FAA knowingly failed to curb and prevent.

The proposed Aircraft Safety Improvement Act of 2020, fails to guarantee the flying public of a quality aircraft certification process by continuing to endorse and affirm the same Organization Designation Authorizations (ODA) system of self-certification that resulted in Boeing deceitfully manufacturing and selling a fundamentally defective passenger jet. In that context, it is also regrettable that the proposed legislation fails to focus on tangible, quantifiable and explicit expansion of the FAA's staff technical and training capacity so that they can independently evaluate and certify aircrafts. As such, FAA may as well continue with its excessive delegation of its regulatory duties to Boeing and others. This self-certification model is contradictory both in theory and practice, and should not be regarded as amounting to any quality certification process.

In addition, the legislation fails to enunciate criminal penalties for aircraft manufacturers and FAA staff who knowingly, recklessly or negligently make misrepresentations or deceitful statements on the airworthiness of aircrafts whether during the certification process or any other period; or who knowingly conceal defects in aircrafts.

For and on behalf of the family of Ethiopian Airlines Flight ET 302 victim George kabau

TOM KABAU,
Nairobi, Kenya.
US Senate Committee of Commerce Science and Transportation
Washington DC

K. Jade Ballard
Ladysmith BC
Canada
V9G 1V5

June 11th, 2020

To Members and Staff of the Committee
Regarding the June 17th Hearing on a Proposed Legislation from Senator Wicker

I am one of the siblings of Micah John Messent. My 23-year-old brother was killed in the March 10th, 2019 Ethiopian Airlines Flight 302 crash in Addis Ababa, Ethiopia. He was aboard that flight because he was chosen to represent Canada at the 4th UN Assembly of the Environment which was being held in Nairobi, Kenya. Micah, along with 156 other precious passengers and crew met their demise in one of the most horrific ways imaginable aboard a Boeing 737Max8.

Yet, only 4 months and one week prior in Jakarta, Indonesia 189 lives were taken when the Boeing 737Max8 of Lion Air flight 610 crashed into the ocean. Our family was aware of this crash from news reports, but we wrongly believed that the appropriate actions to ensure safety would be taken by the Government and agencies who are in place to protect the flying public.

346 lives, in the span of less than 5 months.

Why was the second crash allowed to happen?

During your process I implore you to question FAA Administrator Stephen Dickson as to why the Boeing 737Max8 were not grounded after the first crash.
and why the safety issues and design flaws that were revealed following the investigation into the first crash were not or could not be corrected. Was there undue pressure from industry and profit driven companies that deterred the FAA from properly completing their work.

Please, question why the FAA had to give so much power and oversight to Boeing and allow in-house approval of their own designs.

Please, question why Boeing has resumed production on the Max8 in their Renton facility as of May 27th 2020. It seems as though Boeing believes that the FAA approval process is a mere formality.

Please, call upon additional experts and family members to offer further insight into the technical and human side to these preventable tragedies.

Please, consider the lives of your family, loved ones and yourself if you are going to take a trip or fly for business. There absolutely cannot be a third crash.

Please, use your legislative powers to hold manufacturers accountable for the products they sell within the United States and around the world. Please allow the FAA to do their job and not bow to pressure from corporations who are highly motivated by profit.

My family has lost my brother forever, we would never wish that pain on anyone.

Sincerely,

K. Jade Ballard
Virginie FRICAUDET
49 rue Victor Hugo
94140 Alfortville
FRANCE
virginie.fricaudet@association-et302.fr

Committee on Commerce, Science and Transportation
US Senate Washington DC, 20510

June 16, 2020

Subject: Aviation Safety Bill & 17th June hearing of FAA Administrator Steve Dickson

Dear Senator,

I am the sister of Xavier FRICAUDET who tragically perished in the crash of the Boeing 737 Max of flight ET302 on March 10th, 2019. He was 38 and was to marry with Natalia, his fiancee, four months after the crash.

Xavier was a traveler and an adventurer at heart. We was as intellectual as sportive. But what made him most endearing to everyone was that he was sensitive, discreet, gentle and attentive, curious and cultured, and had a subtle sense of humor.

He was a teacher. He devoted 12 years of his life to French National Education. After his graduation, he passed 8 years in Guyana, accepting the most difficult positions in inaccessible areas of the Amazon, 3 years in Saint Petersburg in Russia, before leaving for Nairobi in Kenya. He never stopped training to be able to teach everybody, from indigenous children to mental diseased children or future teachers.

I am writing this letter on behalf of Xavier’s family and friends.

I have also the duty, as President of the French victims’ association (Flight ET 302—Solidarity & Justice), to write this letter on behalf of our 300 members who help us contributing to the search for the truth about the causes of the crash of the Boeing 737 max flight ET302 and participating in any action to improve the safety of air transport.

It is no secret that the second crash should have never occurred because Boeing 737 Max has an unsafe, single chain design. Safety assessments were fragmented, based on wrong assumptions, were non comprehensive, and actually wrong, as the two crashes demonstrated it. 346 people paid these errors with their life. There have been huge failures in the design process, as well as in the certification process.

As a sky consumer, and as an interconnected citizen of the world, I am sure that the changes in the American aeronautical regulations that you are studying have a global impact. That’s why the regulatory enforcement project that you are currently studying must be thought globally, and not only at the American level, because the civil aviation regulation is a global, interconnected, regulatory system.

The certification authorities of many countries have trusted the work of the FAA and have not looked into the safety of the new MCAS system. If bilateral agreements between countries were a force for the aeronautical industry, to avoid multiplying the costs of certification, the two accidents of the Boeing 737 Max showed that it was also a huge weakness.

With both tragedies of the Boeing 737 Max, Boeing and the FAA have broken trust between national certification authorities. As a consequence, EASA decided to no longer rely on the bilateral agreement with the FAA for the certification of modifications to the Boeing Max, but to recertify itself all the flight control systems.

The bill should consider not only the design and certification process, but also the whole airworthiness regulatory framework.

The second accident should never have occurred. After the Lion Air JT610 accident, it is absolutely impossible that Boeing could ignore the weaknesses of the 737 Max design. It is also unbelievable that they issued an Airworthiness Directive with a runway trim procedure that was inefficient in some parts of the flight envelope. It is as much unbelievable that the FAA “blindly” approved this procedure. Given all the failures and shortcomings known by Boeing, the 737 Max should have been grounded promptly after the first crash. If appropriate reactions and decisions had been made by Boeing and the FAA after the first crash, Xavier would still be alive, as well as all 156 passengers and crew who lost their lives on March 10th 2019.

Boeing and the FAA had all the information to issue appropriate reaction after the first crash.

I deeply hope that the bill will bring regulatory improvements to meet the challenge to restore confidence in overall aviation safety, and will be designed to handle not only national U.S. issues, but also to take into account its worldwide impacts,
so that my brother and the 346 passenger and crew did not die for nothing, and to avoid such disaster occurring again.

Best Regards,

VIRGINIE FRICAUDET
Sister of late Xavier FRICAUDET, on behalf of Francois and Roseline FRICAUDET, his parents, Matthieu and Hélène, his brother and sister, Natalia Kitseleva, his fiancée and on behalf of all Xavier’s relatives and friends.

President of the Association
FLIGHT ET302—SOLIDARITY & JUSTICE

Nancy MacPherson
190B Cliffe Ave
Courtenay, British Columbia
Canada
V9N 2H5

June 16, 2020
Committee on Commerce, Science and Transportation
USA Senate
Washington DC, 20510

Subject: Aviation Safety Bill & 17th June hearing of FAA Administrator

Dear Senate Committee,

Micah Messent was killed in the Ethiopian Airlines Flight 302 crash in Addis Ababa March 10th, 2019. He was a chosen Canadian delegate to the 4th United Nations Assembly of the Environment which was being held in Nairobi, Kenya.

My name is Nancy MacPherson, I am the partner of Matt Messent, Micah’s oldest brother. I feel compelled to write this letter so no other family has to face the pain and suffering I have seen Micah’s family go through.

My partner Matt is a millwright, he works at a local ski resort. Everyday thousands of people trust their lives to ride the ski lifts he repairs and maintains; Safety is his priority everyday at his job. I am a medical doctor and family physician, it is well known that health care has improved its safety protocol by looking to models of flight protocol safety.
As the technical aspects leading to the Ethiopian Air 302 crash emerged it was painfully clear the second Boeing 737 MAX8 crash could have been prevented had action been taken after the first Lion Air 610 Crash, which killed 189 people. In total, 346 people lost their lives and 346 families are suffering like our family.

In the previous senate hearing and whistleblower testimonial it emerged that modelling predicted an estimated 15 fatal crashes due to flaws in the Boeing 737 Max 8 design. Previous testimony and aviation reports clearly outline faults in the Boeing 737 Max 8 aircraft and system failures in the FAA certification process that led to these two crashes. With this letter, I want to tell the human side of this tragedy.

Micah was excited to attend this meeting and he shared his exuberance with family before he departed. He made a point of driving up island, three hours one way, with his loved partner Kidston Short, to see all his family before his big trip. His Grandmother, Edna Camp had prepared a binder for him from clippings of the recent Economist and National Geographic articles about Kenya and the region. It would be the first time Micah would travel internationally.

Micah, the youngest of five children, had a fun loving approachable way about him. Matt, my partner, has great pride and love for his family as did Micah. What a welcoming home, I thought to myself the first Christmas we spent together. How close the five siblings were laughing, hugging, singing, sharing food and Christmas cheer.

Because of Micah’s humility, his family only learned of the depth and breadth of his influence and inspiration on both a professional and personal level after his passing. Micah was 23 years old. Over the last year he has received multiple accolades and awards created in his honour.

At Micah’s University graduation, I remember Matt and Jasper standing for a photo with Micah, so proud of their younger Brother. Micah was the first in their immediate family to graduate from university. He planned to go into law and work for recognition of Indigenous Peoples’ Rights. Micah had his whole life ahead of him.

Micah’s death was devastating to the family and to my partner, Matt. He often repeats that he could not do anything to save his baby brother. Matt has recurrent nightmares of Micah’s last moments on the plane, and of seeing his brother and other passengers catch on fire as the plane is plummeting to their deaths.

Suzanne Camp and John Messent lost their youngest son. Jade Ballard (Wes Ballard), Amber Tansky (Walter Tansky), Matt Messent (Nancy MacPherson) and Jasper Messent (Brianna Savary) lost their youngest brother. Kidston Short lost her partner. Edna Camp lost her grandson. My son, Calder Messent lost his uncle. My nieces and nephews, Olivia Ballard, Ethan Tansky, Scotia Tansky and Ryker Tansky lost their uncle. Aunts and Uncles lost their nephew. Cousins lost their cousin.

There is an emptiness in the house when we come together as a family now, life will never be the same. Micah’s joy and light that he shared made everyone around him shine brighter. My son Calder Messent will miss the golden feeling his family once had.

I hope that in your wisdom you will look at the system that allowed this second crash to happen and take the steps necessary so no other family will have to relive this preventable tragedy.

Sincerely,

NANCY MACPHERSON, MD,
Cottage Medical Clinic.
Dear Senator,

We are writing you as mother, brother and fiance of Camille Geoffroy, one of the 157 passengers who tragically lost their lives in the crash of the Boeing 737 Max of flight ET302 on March 10th, 2019 in Ethiopia. Camille was 28 and on her way to Nairobi in order to join the American humanitarian NGO One Acre Fund as humanitarian worker based in Kakamenga, Kenya. Since then, we have been struggling with Camille's loss as this tragedy has left us alone with our pain, our tears and without any future whereas Camille had her whole life to both live and enjoy.

During her lifetime among us, Camille has dedicated herself to help people by serving as humanitarian worker for several NGOs. On the meantime, Camille’s last goals were to commit with more personal life achievements as celebrating her own wedding and being a mother. Camille was the one the three of us used to love the most as she also left behind tens of family members and friends who are still mourning her and are struggling with the saddest thought that Camille will never be part of their lives anymore.

Therefore, in memory of Camille, Cesar, Njaka and I are writing this letter in regard with both upcoming hearing of FAA Administrator Steve Dickson and the Aviation Safety Bill which is currently discussed at the U.S. Senate.

Much has been written on the Boeing 737 Max. It has an unsafe, single chain design. Safety assessments were fragmented, based on wrong assumptions, were non-comprehensive, and actually wrong, as the two crashes demonstrated it. 346 people have paid the cost of these errors with their life. There have been huge failures in the design process, as well as in the certification process. These accidents caused a tremendous loss of confidence, not only towards Boeing and the FAA, but also towards the entire aeronautical industry.

Our purpose is not to comment all the failures but to raise awareness to avoid them to occur again thanks to the safety bill, even if this wouldn’t fit in a 2 pages’ letter. But, as mourning mother, brother and fiance, and also as close relatives to other family victims and ourselves sometimes passengers, we have suffered the most about what has happened so that we are standing to highlight two crucial points: the current international scope of the safety bill you are considering, and the fact that the second crash should have never occurred.

We are aware that, as French citizens, we do not have any legitimacy to express an opinion on an American bill. However, we would like to draw your attention to the fact that the changes in the American aeronautical regulations that you are studying have a global impact due to the agreements between certification authorities. For example, an FAA certified aircraft in the United States is not fully recertified in Europe thanks to the bilateral agreement between the FAA and EASA. EASA trusts the FAA for its certification work, and recertifies only certain specific points, for example where there are regulatory differences. If these agreements were a force for the aeronautical industry, to avoid multiplying the costs of certification, the two accidents of the Boeing 737 Max showed that it was also a huge weakness. Indeed, due to bilateral agreements, the certification authorities of many countries have trusted the work of the FAA, and have not looked into the safety of the new MCAS system.

We do believe that the regulatory enforcement project that you are currently studying must be thought of globally, and not only at the American level, because the civil aviation regulation is a global, interconnected, regulatory system. For example, it should consider the consequences of bilateral agreements and better frame them, to prevent a chain reaction like the tragedy of the Boeing 737 Max from hap-
pening again. Worldwide aviation regulations are largely based on trust between national certification authorities. With the tragedies of the Boeing 737 Max, Boeing and the FAA have broken that trust. This was expressed publicly by Patrick Ky, Executive Director of EASA, during a hearing in September 2019 at the EU parliament.\(^1\) As a consequence, following the accident of flight ET302, EASA decided to no longer rely on the bilateral agreement with the FAA for the certification of modifications to the Boeing Max, but to recertify itself all the flight control systems.

Hence, we would like to point out that it would be very useful for the American Senate to consider hearing Patrick Ky, executive Director of EASA, and why not, other leaders of certification authorities from other countries. This would allow the Senate to better understand the international consequences of the bill on the overall safety of flight, due to bilateral agreements. Secondly, the bill should consider not only the design and certification process, but also the whole airworthiness regulatory framework. The two Boeing 737 Max accidents highlighted terrible shortcomings in the airworthiness process, and in the response to an accident.

In particular, the second accident should never have occurred. After the Lion Air JT610 accident, it is absolutely impossible that Boeing could ignore the weaknesses of the 737 Max design. It is also unbelievable that they delivered an Airworthiness Directive with a runaway trim procedure that was inefficient in some parts of the flight envelope. It is as much unbelievable that the FAA “blindly” approved this procedure. Given all the failures and shortcomings known by Boeing, the 737 Max should have been grounded promptly after the first crash. Here again, due to bilateral agreements, other certification authorities like EASA in Europe completely relied on FAA and Boeing reactions to the first crash. If appropriate reactions and decisions had been made by Boeing and the FAA after the first crash, Camille would be still alive with us, as well as all 157 passengers and crew who lost their lives on March 10th 2019. Boeing and the FAA had all the information to issue appropriate reaction after the first crash.

As a conclusion, we sincerely hope that the bill will bring regulatory improvements to meet the challenge to restore confidence in overall aviation safety, and will be designed to handle not only national U.S. issues, but also to take into account its worldwide impacts, so that our beloved Camille and the 346 passenger and crew did not die for nothing, and to avoid such disaster occurring again.

Best Regards,

Catherine Berthet,
César Blavet,
Njaka Ralairiveolo.

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Interesting sequences are (approx.):
- from 10:35:00 to 10:46:20: point by Patrick Ky on Boeing 737 Max
- from 11:28:30 to 11:39:25: answers from Patrick Ky on questions related to FAA
- from 11:54:45 to 11:56:07: answers from Patrick Ky on questions return into service schedule

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\(^1\) https://multimedia.europarl.europa.eu/en/committee-transport-tourism-ordinary-meeting-ordinary-meeting_20190903-1000-COMMITTEE-TRAN vd
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In particular, the second accident should never have occurred. After the Lion Air JT610 accident, it is absolutely impossible that Boeing could ignore the weaknesses of the 737 Max design. It is also unbelievable that they issued an Airworthiness Directive with a runaway trim procedure that was inefficient in some parts of the flight envelope. It is as much unbelievable that the FAA “blindly” approved this procedure. Given all the failures and shortcomings known by Boeing, the 737 Max should have been grounded promptly after the first crash. Here again, due to bilateral agreements, other certification authorities like EASA in Europe completely relied on FAA and Boeing reactions to the first crash. If appropriate reactions and decisions had been made by Boeing and the FAA after the first crash, Clemence-Isaure would be still alive, as well as all 157 passengers and crew who lost their lives on March 10th 2019. Boeing and the FAA had all the information to issue appropriate reaction after the first crash.

As a conclusion, I sincerely hope that the bill will bring regulatory improvements to meet the challenge to restore confidence in overall aviation safety, and will be designed to handle not only national U.S. issues, but also to take into account its worldwide impacts, so that my sister and the 346 passenger and crew did not die for nothing, and to avoid such disaster occurring again.

Best Regards,


Brother of late Clemence-Isaure Boutant-Willm, on behalf of Denis Boutant, her husband, Lilas and Zelie her 2 two daughters, Elisabeth Willm her mother, Vincent and Violaine Willm, her brother and sister and on behalf of all Clemence-Isaure’s family and friends.
Committee on Commerce, Science, and Transportation,  
U.S. Senate,  
Washington, DC.  

RE: Committee hearing on the Aircraft Safety and Certification Reform Act of 2020  

Dear Senators:  

We are the immediate family of Juliah Mwashi who was a victim of Ethiopian Airlines flight ET 302. We thank you and commend you for investigating the circumstances surrounding the two deadly crashes of the Boeing 737 MAX involving Lion Air flight 610 and flight 302. We applaud your efforts to improve safety within the aviation industry through the bipartisan Aircraft Safety and Certification Reform Act of 2020 [1] that was the subject of the committee’s hearing on June 17. We believe the proposed legislation is a good initial step towards improving aviation safety for the traveling public. However, we urge you to consider stronger measures to ensure more accountability and oversight, especially during aircraft development and testing phases. We also urge you to hold accountable those involved in the design, approval and what appears to be deception regarding the MAX certification.

Juliah was an advocate through and through. Her latest mission was to foster female leaders of the next generation. Before her life was cut short, she was a branch coordinator of the Young Leaders and the Youth Exchange South to South (YES) Girls Movement programs at the Kenyan Girl Guide Association. She was always smiling and cared deeply for her family, especially her daughters. We are committed to allowing her death to serve as a catalyst for change. One that we hope prevents other families from suffering the same kind of devastating loss.

We and the families of the other victims who perished in the MAX crashes wake up daily to the horrible reality that our loved ones were taken away from us because of Boeing’s greed and the fact that it valued profits far more than human life.

In the years leading up to these tragedies, every effort was made to reduce corporate oversight and governance. This hands-off approach grew more intense under the current administration. In 2018, just weeks before the Lion Air flight 610 crash, Congress yielded to the demands of aircraft manufacturers, primarily Boeing, and relaxed Federal Aviation Administration (FAA) regulations when it approved the FAA’s Reauthorization Act. It stripped nearly all authority over the certification process from the agency and placed it in the hands of those companies that were to be regulated.

Earlier this year, the FAA announced its intention to maintain the existing weakened and flawed regulatory scheme that was used to approve the MAX. [2] This is ill-advised and hardly the type of remedy that will prevent more catastrophic crashes. Ensuring more accountability and oversight during critical phases of certification, such as aircraft development and testing phases, will require Congress to restore actual oversight to the FAA.

Specifically, we call on Congress to eliminate the Organization Designation Authorization (ODA) component of the certification process. The ODA allows aircraft manufacturers like Boeing to essentially self-certify. The ODA shifts the authority to select and manage the manufacturer’s employees who are “loaned” to the agency from the manufacturer. The employees are deemed experts and serve to advise the agency throughout the certification process to spare the agency the cost of hiring and training its own experts. There are no safeguards in place to prevent manufacturers from exercising undue influence over or exerting pressure on their employees to approve aircraft regardless of their defects or risks to the traveling public. That is, in fact, what happened with the MAX.

We understand that before the ODA was established, the Designate Engineering Representative (DER) program provided separate lines of authority. Therefore, the DER from a manufacturer would be less likely to experience the significant pressure from its employer to rush a defective aircraft to market. Such a program with separate lines of authority and an agency with the authority to act independently is critical to restoring the culture of safety that the U.S. aviation industry was known globally for, for many decades. We are not asking for a specific program but we are asking that Congress restore full oversight authority to the FAA immediately.

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Finally, our family implores you to demand accountability for what has already happened. We understand the need for thorough fact-finding probes and investigations, yet we are quickly approaching the second anniversary of the first tragic crash and neither Boeing nor the FAA nor any individuals involved with certifying the MAX have been punished for their wrongdoing and misguided decisions to put profits ahead of human life.

Despite all the evidence showing that Boeing carelessly thumbed its nose at safety regulations throughout the MAX's development, the company and its top executives have not been held accountable. While its former CEO was forced to resign, he walked out the door with a hefty severance package. When the internal conversations were released earlier this year showing the callousness of some Boeing managers and executives, even when the company's own engineers warned that the MAX was dangerous, we were devastated all over again. One employee even said he would not put his family on the MAX should it ever be certified. Yet, greed kept this information hidden until after 346 lives were sacrificed on board two of those airplanes. Allowing this kind of negligent and reckless corporate behavior to exist with impunity reflects the heavy-handedness of corporate giants like Boeing in controlling the oversight process.

Once again, we thank you for your efforts to uncover the truth and rectify the troubled regulatory framework of the U.S. aviation sector. We hope that you will allow our sister and mother's death to remind you of the grave consequences of failing to make the necessary changes to prevent other similar tragedies in the future. Restore the FAA’s authority so that it once again can provide independent oversight and foster a culture of safety. Please give Juliah and the other crash victims justice by refusing to allow those responsible to escape accountability. We ask that you add this letter to the public record for the above referenced committee hearing.

Sincerely,

IVY MACHARIA,
Daughter of Juliah Mwashi.

J.M.,
Minor daughter of Juliah Mwashi.

FLORAH MWASHI,
Sister of Juliah Mwashi.

DAVID MWASHI,
Brother of Juliah Mwashi.

STATEMENT OF JAVIER DE LUIS

I would like to thank Chairman Wicker, Ranking Member Cantwell and the members of the Committee on Commerce, Science and Transportation for holding this hearing and allowing me to submit this written statement.

My name is Javier de Luis. My sister, Graziella de Luis, was on board Ethiopian 302 when it crashed last year. She was a U.S. citizen, living in Rome and working for the UN. Her loss is compounded for me because, as an aerospace engineer (MIT, PhD) with over three decades of experience in this industry, I am very familiar with the development and certification of complex aerospace systems. The information that has come out since the crash detailing the design, testing and certification failures on the part of Boeing and the FAA, provide a constant reminder to me that this tragedy should not have happened. This was not an act of God, this was a failure of man.

I will not rehash Michael Stumo’s excellent and detailed testimony that he has submitted to this Committee. I wholeheartedly concur with all his points and associated recommendations. I will take this opportunity to briefly highlight three key issues that I feel deserve your attention, and should be addressed in any proposed legislation.

1. MCAS. When the accidents happened, initial reports referred to MCAS as a "stall prevention system". Later, we were told that it wasn’t there to prevent stalls, but to smooth out the handling of the aircraft during certain flight conditions. However, as yet no data has been made available to any independent reviewer that shows how this airplane behaves with and without MCAS. I would like to ask a very simple question: is this airplane stable with MCAS turned off? If it is, then why keep it, given its central role in these two accidents? If it isn’t, then it would seem that turning MCAS off when the angle of attack sensors disagree, as has been proposed as part of the return to flight, might not be a good idea. The secrecy surrounding this system should give us pause. The committee should insist that this data be made available for review,
something that the Joint Authority Technical Review report requested over eight months ago.

2. Amended certificates. There is a fundamental incompatibility between a 50 year old airplane design decisions and modern aircraft systems. The 737 Max has two computers, but only operated one at time, along with associated single sensors for key measurements, including angle of attack. At that time, it made sense to have one set of instruments reporting to the pilot, and one to the co-pilot. Modern aircraft are not designed this way. There are multiple and redundant computers and sensors, with data being analyzed hundreds of times per second to quickly identify when something goes wrong or a sensor goes bad. When faced with a difficult aerodynamic problem with the Max, Boeing decided to solve it inexpensively through software instead of making costlier airframe changes. And this would have been fine, except that they decided to run this software fix on systems that did not and still do not have the level of redundancy and reliability that we expect. Evolutionarily, they hacked together a 21st century software fix on a 1960s hardware system. The FAA allowed this to happen, because it lacked expertise and visibility into the design. This cannot be allowed to continue. Boeing cannot be allowed to continue to certify its own designs, especially those systems that directly impact vehicle safety, with little to no outside review.

3. FAA Expertise. I feel that it is important to remember that no new data came out of the Ethiopia crash that was not already there and available after Indonesia. Let me repeat: we learned nothing new after the crash that killed my sister that was not already known after the Lion Air crash four months prior. If the FAA (and NTSB) had properly evaluated what that data was telling them and grounded the fleet after the Indonesian crash, my sister would be alive today. This is not 20/20 hindsight. All the data was there and available, and it clearly showed that they had a systemic software problem that affected multiple aircraft systems, but they treated it as if it was a simple fix, telling pilots to simply turn the MCAS system off. To do its job properly, the FAA must be required to draw in experts from outside (academia, National Academies, government labs), to assist them in this work. Otherwise, they will understandably rely on the engineers at Boeing, which, as we have seen in the months since the crash, can have different incentives that do not necessarily line up with the public interest.

Thank you for your time and the opportunity to provide this testimony,

JAVIER DE LUIS, PHD.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JERRY MORAN TO HON. STEPHEN M. DICKSON

Question 1. As you know, Kansas is renowned in the world of aviation and for bringing new technology to market. How can the FAA better position themselves to consider and adopt new innovations, which can be essential in advancing aviation safety?

Answer. The FAA is always looking to facilitate the safe introduction of new technologies and enable innovation. To support innovation in aviation, the FAA Aircraft Certification Service (AIR) continues to expand the FAA’s use of performance based regulations, rather than prescribing a single means to achieve safety. The revision to title 14 Code of Federal Regulations (CFR) part 23 was a significant milestone to enable approaches to achieve safety by adopting performance based regulations and leveraging industry experts in the development of consensus standards as a means of compliance. While consensus standards provide one means of compliance, the performance-based regulations allow for additional innovative means to achieve safety. AIR’s Policy and Innovation Division supports aerospace innovation by creating novel means of compliance and develops and maintains AIR regulations.

The FAA also promotes early engagement with industry, well in advance of the certification phase where the FAA traditionally starts to get involved in new technology. Early engagement is helping new entrants understand the data and information they need to provide to the agency to demonstrate safety compliance for

1 Consensus Standards are specifications developed or adopted by voluntary consensus standards bodies, which may provide performance-based or design-specific technical specifications and related management systems practices. PL–104–113: National Technology Transfer and Advancement Act of 1995 requires Federal agencies to use voluntary consensus standards.
their new and innovative products and allows the FAA to understand trends and emerging technology in the market. This may save companies time and money by allowing them to make design adjustments earlier in their certification process. It also allows the FAA to plan for needed resources and expertise.

To foster operational innovation, the FAA’s Unmanned Aircraft Systems (UAS) Integration Office works with new entrants, as well as incumbent UAS operators, via our Partnership for Safety Plan (PSP) initiative. Through PSPs, the FAA works with specific UAS companies or UAS operators to safely enable increasingly complex UAS operational capabilities while sharing operational data that supports the FAA’s policy making and standards development activities. In addition, through the PSPs, the FAA provides technical assistance for UAS operators that need support navigating the operational approval process(es) to enable specific drone-related activities.

Additionally, the issue of advancing new technologies is also addressed in the Joint Authorities Technical Review and Special Committee report, which includes recommendations to the FAA in advancing guidance and standards. Ensuring the most up to date guidance is essential in moving forward in the field of aviation, although the acceptance guidance and standards can oftentimes be delayed. How do you suggest addressing this issue?

Answer. The FAA agrees that it is critical to foster advances in new technology. This improves safety as well as enhances the capability and efficiency of the National Airspace System (NAS). We are standing up the Center for Emerging Concepts and Innovation in the Aircraft Certification Service in Aviation Safety (“the Center”) within the Aircraft Certification Service. The Center is already engaged with industry on approximately 90 projects. We continually reach out to industry to foster innovative technologies in design and production processes, as well as new methods for demonstrating compliance to safety requirements during product certification. The Center also coordinates across the FAA in the introduction of new product and equipment designs, operating models, and integration of unique aircraft into the NAS.

The Secretary of Transportation established the Safety Oversight and Certification Advisory Committee (SOCAC) in August of 2019, per the FAA Reauthorization Act of 2018. The SOCAC advises the Secretary on policy and guidance recommendations as well as options to expedite the rulemaking process. By working with the SOCAC, the FAA will ensure a coordinated effort, focusing on consensus standards, with input from industry, labor organizations, and safety experts.

Question 2. As you know, the recent COVID–19 pandemic has negatively affected the aviation industry as a whole, including our manufacturing and maintenance workforce, which has experienced waves of furloughs and lay-offs. If we continue to lose these skilled workers, what do you see as the potential impact?

Answer. The FAA takes a systemic approach to industry oversight supported by robust processes that govern production, maintenance, and operations, to ensure changes do not adversely impact safety in the NAS. As a result of the COVID–19 pandemic, the aviation industry has been forced to reduce production, maintenance, and operations activities. Sadly, many workers and their families have had to, or may still, suffer furloughs and, in some cases, lay-offs. At the same time, the industry must find ways to retain experienced workers to continue to meet safety requirements as well as to monitor and manage the risks to our aviation systems. The aviation industry may experience a rebound in workforce demand when demand for commercial and general aviation operations increases.

Question 3. During your testimony, you commented on the importance of expanding the FAA’s efforts with other authorities around the world and in fostering safety standards and policies at ICAO to help achieve the highest possible levels of safety globally.

I recently introduced S. 3959, along with Ranking Member Cantwell, Sen. Capito and Sen. Klobuchar, which provides additional resources for increased engagement by the FAA to promote collaboration and data sharing on an international level. Additionally, this legislation would work to address human-machine interface concerns, by providing resources to the ICAO’s working group that addresses this important topic. Can you describe how this legislation will work toward advancing a more holistic level of aviation safety on a global level?

Answer. Education, training, familiarization, and harmonized global standards are the best ways to achieve a holistic level of global aviation safety to the benefit of U.S. citizens traveling worldwide. The FAA plays an extremely important leadership role in this effort.

Each of the factors below are important elements of advancing global aviation safety and include:
• Data sharing, including efforts to establish the legal and technical frameworks necessary for secure data exchange;
• Ensuring domestic and international pilot training keep pace with innovation and increasingly automated aircraft systems to ensure continued safety levels; and
• Promotion of U.S. regulatory approaches and research on pilot training and human machine interface improvements at ICAO and in other international venues.

The FAA can positively influence global aviation safety through international leadership and technical exchanges and assistance, including those related to safety and management oversight and assistance.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. SHELLEY MOORE CAPITO TO HON. STEPHEN M. DICKSON

Question 1. One of the concerns in the wake of these recent crashes has been the usage of automation in the cockpit and pilot training on these systems. I certainly believe that automation can and has improved aviation safety, but I believe that it is imperative to ensure pilots are properly trained on how to interact with these systems.

As aircraft become more automated, what oversight changes are being considered at the FAA to ensure pilots also become more proficient in managing these multiple automation systems?

Answer. The FAA shares the belief that pilots must know and understand the systems of the aircraft they are flying. Through the issuance of the Airmen Certification Standards (ACS), which are the testing standards for pilots to receive a certificate or rating in the United States, the FAA is driving that message, particularly for automated systems. Publication of the ACS informs training providers and applicants, which ultimately drives training program content.

The ACS is part of the safety management system (SMS) framework that the FAA uses to mitigate risks associated with airman certification training and testing. Specifically, the ACS, associated guidance, and test question components of the airman certification system are constructed around the four functional components of an SMS:

• Safety Policy that defines and describes aeronautical knowledge, flight proficiency, and risk management as integrated components of the airman certification system;
• Safety Risk Management processes through which internal and external stakeholders identify and evaluate regulatory changes, safety recommendations, or other factors that require modification of airman testing and training materials;
• Safety Assurance processes to ensure the prompt and appropriate incorporation of changes to training or testing that may arise from new regulations and safety recommendations; and
• Safety Promotion in the form of ongoing engagement with both external stakeholders (e.g., the aviation training industry) and FAA policy divisions.

The FAA developed the ACS along with associated guidance and updated reference material in collaboration with a diverse group of aviation training experts as part of a workgroup under the Aviation Rulemaking Advisory Committee (ARAC). The goal is to drive a systematic approach to all components of the airman certification system, including knowledge test question development and conduct of the practical test.

In June 2019, the Airline Transport Pilot and Type Rating ACS (ATP ACS) became effective. This transition from the Practical Test Standards enabled the standard to be updated to reflect new technology pilots will find on the flight deck and new aircraft systems that are incorporated into the design of aircraft. By adding a knowledge standard, the FAA specifically added a requirement for the pilot seeking a multiengine airplane ATP certificate, to demonstrate an understanding of “[a]irplane automation components (i.e., flight director, autopilot), their relationship to each other, and how to manage the automation for flight”. For many of the tasks to be tested for the certificate or type rating, an applicant is expected to demonstrate the ability to identify, assess, and mitigate risks that can result from a failure to manage automation and navigation equipment. Finally, in a message to evaluators using the ATP ACS, the FAA states that during the practical test, “the applicant is expected to demonstrate automation management skills by utilizing in-
standards and processes become the foundation for global standards. In the long
U.S. industry can compete fairly in the global marketplace and that U.S. safety
sue global influence. FAA outreach and technical assistance helps ensure that the
aviation industry requires proactive engagement as other nations aggressively pur-
nership with our global counterparts. Additionally, the competitive nature of the
builds lasting relationships that are critically important in maintaining trust and
ards and procedures. As such, a willingness to render FAA technical assistance
around the world has helped harmonize and obtain global acceptance of U.S. stand-
we have today. Active FAA engagement with civil aviation authorities and partners
tries has significantly contributed to the safe and seamless global aviation network
sistance, has this been helpful in building continued outreach with these countries?

How is the FAA working with airplane manufacturers to address and examine the
ongoing operational challenges with aircraft automation?
Answer. The FAA works with airplane manufacturers to address ongoing oper-
tional challenges with aircraft automation in both design and operations, which are
overseen, respectively, by the Aircraft Certification Service (AIR) and the Flight
Service (FS). The FAA recognizes the importance of integration, communication, and collaboration between these two offices. This collaboration is especially important in our oversight and certification activities.
The FAA requires the design of the aircraft systems, including autoflight systems, to be evaluated for potential pilot errors (14 CFR 25.1302 and 25.1329). This work is performed by AIR. FS evaluates the same aircraft systems for "suitability for use" in ongoing airline operations and to specify what minimum pilot training is required. In these evaluations, the manufacturer must describe how it has accounted for and will address lessons learned from previous accidents and airline experience.

Question 1. At the 2019 International Civil Aviation Organization (ICAO) General Assembly, the FAA presented a working paper that made recommendations on this issue and also asked ICAO to assemble a new working group to address pilot training and automation dependency. I applaud the FAA's actions and their further coordination with ICAO on establishing this new working group.

Despite the COVID–19 pandemic, are things on track to establish the Personnel Training and Licensing Panel?
What kind of feedback has the FAA received from ICAO?
Answer. Since the 40th Assembly, the International Civil Aviation Organization (ICAO) has progressed the dialogue regarding the creation of a new technical panel covering personnel training and licensing. During its most recent session earlier this year, the ICAO Air Navigation Commission approved the establishment of a new Personnel Training and Licensing Panel (PTLP). On August 17, ICAO formally notified member States of the establishment of the PTLP, requested nominations for membership, and provided a preliminary Terms of Reference and work program. The first meeting is planned for mid-fall.

Question 2. I appreciate your statements with regards to expanding the FAA's efforts with other foreign civil aviation authorities around the world in order to improve aviation safety globally. I believe that the United States plays a critical role in fostering improved standards globally. It is for this reason I joined with my colleagues Ranking Member Cantwell, Senator Moran, and Senator Klobuchar in introducing S. 3959, the Foreign Civil Aviation Authority Assistance Act yesterday.

When the FAA has dispatched experts to provide technical assistance to other countries has significantly contributed to the safe and seamless global aviation network we have today. Active FAA engagement with civil aviation authorities and partners around the world has helped harmonize and obtain global acceptance of U.S. standards and procedures. As such, a willingness to render FAA technical assistance builds lasting relationships that are critically important in maintaining trust and partnership with our global counterparts. Additionally, the competitive nature of the aviation industry requires proactive engagement as other nations aggressively pursue global influence. FAA outreach and technical assistance helps ensure that the U.S. industry can compete fairly in the global marketplace and that U.S. safety standards and processes become the foundation for global standards. In the long

Answer. Dispatching FAA experts to provide technical assistance to other coun-
tries has been helpful in building continued outreach with these countries?

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When the FAA has dispatched experts to other countries to provide technical as-
stance, has this been helpful in building continued outreach with these countries?
term and to remain a global leader, the FAA must continue to maximize opportunities to engage with domestic and international partners to advocate continuous safety improvement and increase compliance with and bolstering of international safety standards. Over the years and since my arrival at the agency, I have found international aviation authorities to be very receptive to and anxious for FAA leadership.

**Question 4.** I appreciate your statements and the FAA’s commitment to nurturing a healthy and robust reporting culture. Following the 737 MAX crashes, communications between FAA personnel and Boeing’s 737 Chief Technical Officer at the time highlighted a concerning culture at Boeing. And I appreciate the FAA’s prompt criticism of Boeing’s failure to disclose those communications and your request for an immediate explanation.

How does the FAA plan to instill this type of Just Culture, as you describe in your testimony, going forward?

**Answer.** The FAA is committed to cultivating a just culture that promotes continuous improvement of safety systems and outcomes. In 2018, the Associate Administrator for Aviation Safety (AVS–1) worked with senior Aviation Safety (AVS) organization leadership to establish a strategic plan. On April 18, 2019, AVS published the AVS Strategic Plan, which includes a focus on improving the safety culture, not just in skills and processes, but in behaviors and relationships as well. As part of this strategic plan, and to maximize employee engagement in getting to the next level of safety, AVS management and employee representatives are working together to create a Voluntary Safety Reporting Program (VSRP) as one significant initiative to continue fostering a just safety culture. The VSRP will be an internal system that will help identify safety risks at all levels. It will establish a voluntary, confidential, and non-punitive environment that encourages open reporting of aviation safety issues and concerns. As we see with industry voluntary safety reporting programs, the non-punitive nature of VSRP is of particular importance, because it clearly puts the focus on fixing safety issues, not targeting people. The VSRP will make use of best available, well-established programs that already exist within FAA and industry, including the option to file anonymously and for an independent, neutral team to review and investigate safety issues. Our goal is for the VSRP to be transparent, timely, visible, and responsive, with a tracking system to identify patterns in the data. I am a strong advocate for the VSRP, and believe this program is foundational to the type of open, transparent and collaborative just culture we seek.

In addition, the Aircraft Certification Service (AIR) has established initiatives to support the development, production, and maintenance of safe, compliant products. These initiatives focus on formalizing expectations for industry self-correction and voluntary disclosures; monitoring and improving system safety and performance; and incorporating the compliance philosophy into international agreements. More information about these initiatives and efforts to cultivate a just culture are available on our website.

**Question 5.** I appreciate the efforts DOT and the FAA are taking to protect passengers and employees during this time. I believe efforts like the ones you described in your testimony (complying with CDC guidelines and requesting passengers wear face coverings while flying) can play a positive role in keeping travelers safe and secure in the short-term. In your opinion, what further measures are needed in order to rebuild passenger confidence?

**Answer.** Government, aviation, and public health leaders must work together to meaningfully reduce the public health risk and restore passenger, aviation workforce, including crew, and public confidence in air travel. The FAA has been deeply engaged in these efforts with the CDC and the Departments of Homeland Security and State since the early stages of the COVID–19 public health crisis. In the first week of February, FAA published a Safety Alert for Operators (SAFO) that contained CDC guidance for airlines and crews on ways to ensure the health of flight crews traveling overseas. That document has been updated three times—most recently in mid-May—to reflect changes in virus spread and update health protocols to protect air crews.

On July 2, 2020, the Department of Transportation, the Department of Homeland Security, and the Department of Health and Human Services jointly published Runway to Recovery, which provides general guidance and specific recommendations for reducing public health risk in passenger aviation environments. The measures discussed include requiring face coverings, promoting social distancing, enhancing cleaning and disinfection, and minimizing in-person interactions. This document will continue to be updated based on the latest public health research on COVID–19 and the best strategies to mitigate its spread.

To affect public health risk reduction in the global air transportation, FAA’s Deputy Administrator Dan Elwell has been leading the U.S. delegation’s participation...
in the ICAO Council Aviation Recovery Taskforce (CART). The CART also developed and published a set of recommendations, which, like the Runway to Recovery, provide guidance to the aviation industry about measures to take to reduce public health risk in aviation through its "Take-off Guidance," which was published in early June 2020. These two documents, which are closely aligned, provide substantial guidance on ways to reduce public health risk and build passenger and workforce confidence.

The Department of Transportation also sent approximately 87 million cloth facial coverings to airports for passenger use. This will help protect passengers and crew and boost passenger confidence in America's transportation systems. These 87 million cloth facial coverings are in addition to the over 4 million cloth facial coverings the Department provided earlier this year to critical infrastructure workers in the aviation sector. More information about these and other COVID-related agency actions is available on our website.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. MIKE LEE TO HON. STEPHEN M. DICKSON

Question 1. The Special Committee to Review the FAA's Aircraft Certification Process at the Department of Transportation released a report that included a number of recommendations for the FAA to consider related to improving the FAA's aircraft certification process. The report included a recommendation that the FAA mandate Safety Management Systems (SMS) for design and manufacturing organizations.

a. What are the core safety improvements for an organization that SMS brings to the table?

Answer. Safety Management Systems (SMS) enable the FAA and also individual manufacturers or operators to coordinate risk management processes and feedback loops within and between design, manufacturing, operation, and maintenance functions. Another key benefit of SMS is that it moves visibility of and accountability for safety issues to the leadership level of the organization. The integration of safety management principles into design and manufacturing processes bring with it a holistic systems approach to safety that can better identify and address issues or trends before they surface.

Importantly, SMS clearly places responsibility for safety assurance with designers and manufacturers, with the FAA continuing to provide regulatory oversight. Data sharing is the norm, and all parties inform each other about safety insights. This results from all parties sharing an open, trusting culture characterized by a commitment to compliance, self-correction, and voluntary disclosure, and to operating with a safety-first mindset. Safety is also enhanced in a systematic way, rather than through individual reports or anecdotal information, so that the FAA has the necessary insight to oversee and assess the manufacturer's safety performance.

b. Are there any notable concerns with a government mandatory SMS for design and manufacturing organizations?

Answer. The FAA must ensure that any SMS requirements are appropriately scoped and structured to achieve the desired safety benefits, without imposing an undue burden on small design and production approval holders. To support this, the FAA is exploring a strategy to scale implementation costs of SMS to the risk a product presents to the aviation system.

FAA requirements for SMS will not only promote standardization but also streamline fair global market access for U.S. design and manufacturing companies. A mandated SMS, as opposed to the current voluntary system, will enable the FAA to meet international SMS standards as described in International Civil Aviation Organization (ICAO) Annex 19.

c. When SMS is introduced into an organization, is it considered an entirely new system or does it build upon an organization's existing safety checks, processes, and procedures?

Answer. SMS builds upon existing processes and procedures. SMS is integrated into the management systems of the organization, and becomes a way of doing business and is infused in an organization's existing system. Inherently, SMS enables an integration function that ties together risk management in an organization to enhance a system perspective of safety. As noted above, this system approach to safety has proven to be extremely effective in all segments of aviation where mandatory SMS has been adopted.
d. What percentage of U.S. certified design and manufacturing organizations participate in the FAA’s voluntary SMS program?
Answer. Currently 12 of the 71 companies (approximately 17 percent) with both a type and production certificate are participating in the Aircraft Certification Voluntary SMS program.

Question 2. Has the FAA conducted a cost-benefit analysis on a mandatory SMS for design and manufacturing organizations? Can you provide any data to better understand the regulatory costs associated with SMS compliance?
Answer. The FAA recently initiated a rulemaking project that would update title 14 Code of Federal Regulations (CFR) parts 21 (design and production), 91 (air tours), 135 (commuter and on demand air carriers) and 145 (repair stations) to require persons subject to those parts to meet the SMS requirements codified in 14 CFR part 5. The FAA will carefully assess the costs and benefits of SMS for these entities as part of the rulemaking process and present our findings for public comment.

Question 3. ICAO’s SMS standards offer flexibility for member states to structure implementation of SMS to fit the unique needs of their aviation industries. Does the FAA believe the same flexibility should be given from the FAA to U.S. design and manufacturing organizations in implementing mandatory SMS?
Answer. Yes, the FAA believes that SMS should offer flexibility. The FAA’s SMS requirements, described in 14 CFR part 5, are performance-based and enable design and manufacturing organizations to implement SMS within the context of their existing systems.

Question 4. What foreign countries (if any) have a mandatory SMS requirement for design and manufacturing organizations that produce aircraft that operate within the United States under Part 121?
Answer. No other countries have made SMS mandatory for the design and manufacturing of aircraft that operate under 14 CFR part 121 in the United States. The European Aviation Safety Agency, however, has issued a Notice of Proposed Amendment that would require SMS for design and manufacturing organizations, but the rule has not reached final publication. SMS for design and manufacturing organizations is also being discussed in Canada and Brazil.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. GARY PETERS TO HON. STEPHEN M. DICKSON

Last year at your confirmation hearing, we discussed the Inspector General’s report “Enhanced FAA Oversight Could Reduce Hazards Associated with Increased Use of Flight Deck Automation” and its recommendations regarding pilot training and standards. There has since been near universal agreement from technical experts, including the National Transportation Safety Board, that assumptions about pilot training were not representative of the real-world.

Question 1. What progress has been made since we last spoke about this at your confirmation hearing last Spring?
Answer. Since we spoke at my confirmation hearing, the FAA’s Aircraft Evaluation Division (AED) has increased its participation in Aircraft Certification evaluations of flight deck systems and in reviews of system safety assessment assumptions about pilot performance, including pilot responses to failures. The Aircraft Evaluation Division also recently hired six human factors specialists to support this effort as well as to assist with conducting operational and maintenance evaluations.

Domestically, the FAA has been very active in the development of new rules and guidance for the improvement and maintenance of air carrier pilot manual flying proficiency. The FAA has always required demonstrating and maintaining proficiency of manual flying skills. The FAA requires at least 21 and potentially 32 maneuvers to be performed manually during air carrier pilot training and checking (e.g., takeoffs, steep turns, stall prevention and recovery, upset prevention and recovery, manually controlled instrument approaches). Air carrier pilots must also satisfactorily perform loss of reliable airspeed, which reinforces the need for pilots to ignore erroneous indications and manually fly the aircraft with sole reference to pitch and power displays.
The FAA also agrees that at a global level, if automation dependency and degradation of manual flight operations skills are not satisfactorily addressed in existing standards, there may be a high level of variation in the approach utilized by individual civil aviation authorities (CAA) regarding how associated risks may be addressed in regulation or guidance. This variation adds an additional layer of complexity to addressing automation dependency and degradation of manual flight operations skills worldwide.

In September 2019, the FAA presented a working paper at the International Civil Aviation Organization (ICAO) General Assembly seeking the establishment of a new panel that would address pilot training and automation dependency. This panel would be an important step in understanding the scope of automation dependency globally and bring the international community together to work towards accepted solutions that could reduce the variability in how the issue is addressed by individual CAAs.

With broad support for establishing a panel at the General Assembly, the ICAO Air Navigation Commission approved the establishment of a new Personnel Training and Licensing Panel (PTLP) in June 2020. The United States has been named a member of this panel and the panel’s work is anticipated to begin in early 2021. The FAA will continue to advocate for taking steps to address automation dependency, manual flight operations proficiency, and improving pilot management of automated systems globally.

Finally, we continue to address the recommendations from the Secretary’s Special Committee on the FAA’s Aircraft Certification Process, which include improving the consideration of operational environments during the type certification process, and enhancing the coordination between the FAA’s Aircraft Certification and Flight Standards functions. These actions are a key part of ensuring pilot training assumptions reflect real-world operations not only in the U.S., but globally.

Question 2. Given the state of aircraft manufacturing, have you been in contact with other Federal agencies regarding concerns about a potential impact on our Nation’s manufacturing readiness level from a national security perspective?

Answer. The FAA understands that the national health emergency has resulted in a reduction in airline operations and aviation manufacturing production. Through outreach and communication with various manufacturers, the FAA has noted that many companies have slowed or stopped production and have had to furlough or lay-off employees. The FAA is monitoring these changes and is continuing to conduct risk-based oversight to ensure compliance with regulatory requirements, and ensure that products and articles conform, and are in a condition for safe operations. The Department of Transportation also coordinated with the Department of Treasury under The Coronavirus Aid, Relief, and Economic Security (CARES) Act, from which airlines were eligible to receive more than $50 billion in grants and loans. The separate loan program made $25 billion available to airlines and certified repair stations, which serve as a critical link in the manufacturing production chain. The FAA has not been involved in any official outreach to other Federal agencies regarding concerns about a potential impact on our Nation’s manufacturing readiness level from a national security perspective.

Reports indicated that the Boeing initially relied on the outsourcing of some of the 737 MAX work overseas, which could have contributed to the challenges with the MCAS.

Question 3. Has FAA looked into this?

Answer. Boeing utilizes both domestic and international suppliers for design and production work associated with its airplane production programs. Boeing did not utilize any international suppliers for design and production components of the 737 MAX Maneuvering Characteristics Augmentation System (MCAS). Additionally, from information obtained during the 737 MAX accident investigations, as well as other investigations of the 737 MAX certification, the FAA is not aware of any international supplier work that contributed to the 737 MAX accidents or challenges with the MCAS.

When the previous CEO of Boeing testified before our committee last October, I asked him whether Boeing made a mistake in opposing robust independent regulatory oversight from FAA due to “regulatory costs.” After pressing him on the matter, he agreed that in hindsight, Boeing undervalued the role of an independent oversight. One example is that [Boeing] company managers rejected a backup system for determining speed, which might have alerted pilots to problems linked to two 737 MAX crashes. A similar backup system is installed on the larger Boeing 787 jet, but it was rejected for the 737 MAX because it could increase costs and training requirements for pilots.
**Question 4.** What has FAA done to make sure this type of corner cutting is avoided?

**Answer.** The FAA validates compliance with regulations and provides exceptions supported by safety data. The FAA has also increased our involvement in the review of the system safety analysis for major type design changes. Specifically, the FAA is increasing involvement in projects with a focus on assumptions made in support of critical failure conditions and evaluation of related probabilities of failure occurrence that would indicate the need for possible system redundancies. In addition, we are working closely with Boeing as it establishes a comprehensive Safety Management System so that decisions, such as those noted above, would be determined using a risk-based decision-making process. We have consistently made it clear that safety and quality need to be the top priorities in the design and manufacturing processes. Boeing’s work to develop its Safety Management System is foundational to that effort and FAA will be closely monitoring its performance as SMS is implemented and operationalized.

As ranking member of the Senate’s Homeland Security Committee, I deal a lot with cybersecurity challenges in the Federal government. To deal with threats, the Federal government actually hires hackers to find our vulnerabilities and ensure the safe use of computer systems. The process that produced the MCAS does not seem to have followed this philosophy of inviting regulators to find its vulnerabilities. In fact, regulators claimed to not fully understand the MCAS.

**Question 5.** How is FAA addressing this?

**Answer.** Industry standards were applied to the development and certification of the flight control computer (FCC) software, including MCAS. These industry standards provide established processes to identify and address vulnerabilities in the design of software. This process includes extensive FAA involvement in the verification and validation aspects throughout the software development lifecycle, including four phases or stages of involvement (SOI) that ‘audit’ the software requirements, analysis, and accomplishments. The audits ensure through robust development assurance process application that safety requirements are incorporated and the software will perform reliably. Although improvements regarding the implementation of the processes may be appropriate, the processes were properly applied to the MCAS, using assumptions that were consistent with industry practice and understanding prior to the accidents.

**RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TAMMY BALDWIN TO HON. STEPHEN M. DICKSON**

The Department of Transportation’s Special Committee to Enhance Aviation Safety, commissioned to review the procedures of the FAA for product certification and processes followed by the FAA and Boeing during the certification of the 737 MAX 8, released findings and recommendations in January. Within its report, the Committee made findings and offered recommendations on better data gathering and utilization, noting that “Better data gathering, targeted analysis by experts, and the use of all available data to develop and implement corrective actions to mitigate risk would bolster aviation safety.”

FAA’s timelines for delivering data tools for risk-based decision-making occur between 2021 and 2025.

**Question 1.** In the interim, what is FAA doing to provide the agency with sufficient tools to leverage the large amounts of data the agency has access to, but is unable to use for safety analysis because of limitations in IT infrastructure?

**Answer.** The FAA assembled a Safety Data and Analysis Team (SDAT) of cross-functional subject matter experts representing all FAA lines of business and staff offices to improve the way safety data is consolidated, managed, and accessed agency-wide. This team has identified the safety data systems that are being registered in the agency’s Enterprise Information Management (EIM) data repository. This repository provides awareness, centralization, and accessibility for improved data-driven, risk-based decision making. As part of the SDAT’s efforts, the FAA developed a data governance portal to improve the quality of FAA’s data inventory and ensure that data is easily discoverable. It also verifies the existence of key information to be used for statistical and reference purposes that has been captured in the portal for critical enterprise data assets.

Additionally, offices across the FAA are collaborating, in conjunction with the FAA Chief Data Office, to apply data cleaning/analysis tools and techniques to fuse previously separate aircraft safety data to provide a more complete, life-cycle view of aircraft safety. As part of these efforts, the FAA is developing and implementing
analytic tools and capabilities needed to identify and assess aviation safety risk. These tools aim to support data visualization and understanding by the broad FAA workforce, as well as advanced analytics including text mining, machine learning, anomaly detection, regression, Bayesian networks, and causal diagrams.

- What is FAA’s timeline for having sufficient data available for broader use by FAA, including Aircraft Certification engineers and inspectors, to make data-driven risk-based analysis possible?

  Answer. The FAA currently collects and monitors safety data; however, the FAA is always looking for new sources of data and continues to build our capacity for enhanced trend analysis and decision-making. In alignment with FAA’s commitment to data viability, information sharing, and integration of safety data at the agency level, the FAA implemented a five-year strategic Safety Data and Analysis Team (SDAT) Strategic Plan in FY19 plan to fulfill several major initiatives to improve agency safety data.

- Will this solution be in place prior to the MAX 737 8 return to service?

  Answer. Foundational elements of the solution will be in place upon MAX 737–8 return to service with additional functionality being added as data and tools are approved for EIM use.

  The FY20 Transportation, Housing and Urban Development, and Related Agencies Appropriations Act included $5 million for a veteran’s pilot training grant program at FAA, in line with my bipartisan American Aviator Act.

Question 2. What is FAA’s current timeline to make grants available for eligible flight schools?

Answer. The FAA initiated the Paperwork Reduction Act on the veterans pilot training grant in February 2020. The FAA continues to work with DOT’s Volpe National Transportation Systems Center leading the Forces to Flyers research initiative in order to incorporate applicable findings from the research program into the development of a grant program geared toward veterans.

Forces to Flyers was a three-year research initiative announced in 2017 to explore how best to assist veterans transitioning to new careers as pilots and form successful paths. Due to the COVID–19 situation, results from Forces to Flyers research program were delayed because academic school years were disrupted, but the program recently wrapped up in October. We are awaiting the final report and its findings, and will then assess next steps. Additionally, the FAA has been actively working and making significant progress on two other new grant programs authorized in the FAA Reauthorization Act for workforce development of pilots and maintenance technicians.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JON TESTER TO HON. STEPHEN M. DICKSON

Question 1. It is evident, through internal messages or whistleblower complaints, that both FAA and Boeing ODA employees face a lot of outside pressure to do their jobs as quickly as possible, because time and money are on the line. What steps are you taking to ensure that every single ODA employee feels like safety is their number one priority?

Answer. The FAA is actively working to review and reform certain ODA practices and will issue an updated policy in 2021 addressing undue pressure and further defining communication expectations. This policy will emphasize safety as the top priority by providing clarity on undue pressure and the appropriate communication between unit members and the FAA. Specific to Boeing, the FAA has issued a proposed civil penalty against The Boeing Company (Boeing) related to ‘undue pressure’ of Boeing ODA unit members. In addition, we have been working with Boeing to incorporate changes into the Boeing ODA procedures to establish additional restrictions that further protect ODA unit members from interference or undue pressure while executing their duties on behalf of the FAA. The FAA is also working closely with Boeing as it establishes a comprehensive Safety Management System, which will include continuous monitoring of Boeing’s internal performance associated with the ODA as well as the broader company. The Boeing SMS will be foundational to ensuring that each employee clearly understands that safety is the number one priority, and that production deadlines and financial considerations are always subordinate to safety and quality. FAA will be closely monitoring their SMS as it is implemented and operationalized in 2021.

Question 2. Both of the aircraft in question received recent routine maintenance prior to the crashes. Not only did these inspections fail to see the flaws with the Angle of Attack sensors, they also failed to flag certain wiring bundles as a potential
hazard. What are you doing to ensure that the FAA leads the world in ensuring mechanical safety standards, and that as we move forward with aircraft safety improvements, we are keeping maintenance in mind?

Answer. While we currently only have the final accident report for Lion Air, based on our review of the accident data, it is believed that only the Lion Air accident had an indication of maintenance associated with the AOA sensor. The AOA sensor on that Lion Air airplane received routine shop maintenance prior to the accident, during which it may have been mis-calibrated. However, the accident investigation could not confirm whether the AOA sensor was properly installed. The FAA verified that the established maintenance installation instructions would have identified a mis-calibrated AOA sensor on the airplane. Established maintenance practices would not require identification and separation of wires within AOA sensor wire bundles.

Subsequent to the two 737 MAX accidents, Boeing reviewed the engineering analysis of the AOA sensor wire bundles. Based on this review, the FAA requested a design change, via a notice of proposed rulemaking revising the routing of AOA sensor wiring to separate the power and control wires. This design change complies with later safety standards than those that were applied to earlier versions of the 737.

**Question 3.** The recent Department of Transportation Special Committee report came back with several recommendations for improving aircraft certification, including improving data sharing and management practices. What is the timeline for having sufficient data available for broader FAA workforce to do their job of making data-driven risk-based analysis using the information that is currently available to them?

Answer. In alignment with FAA’s commitment to data viability, information sharing, and integration of safety data at the agency level, the FAA implemented a five-year strategic plan in FY 2019 to fulfill several major initiatives to improve agency safety data. A fundamental component of this plan is to develop and implement an Enterprise Information Management (EIM) platform that the FAA workforce can leverage to collect, store, access, and analyze agency data. The EIM platform is an FAA-developed, cloud-based, big data platform that consists of two key items:

- A large repository or “Data Mall” for FAA data that is organized and cataloged for easy access, but safeguarded to preserve its integrity and to protect data from unauthorized access.
- A collection of curated technologies and tools to enable FAA personnel to efficiently transform data into information.

By Fall 2021, the FAA anticipates having governance in place, which will:

- Engage the FAA workforce in data management oversight and sharing. This includes engaging data information stewards, end users, and members of leadership to evaluate the effectiveness of data governance in terms of data availability, metadata, and data integrity.
- Continuously expand the establishment for safety data governance requirements using a systematic approach beginning with the most critical safety data resources.
- Refine our concepts, capabilities, and tools for advanced safety analysis to identify and assess safety risk through ongoing workforce engagement.

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**Response to Written Questions Submitted by Hon. Kyrsten Sinema to Hon. Stephen M. Dickson**

As part of the FAA’s settlement agreement, FAA agreed to a “Two Step” process to address the concerns of Phoenix’s surrounding communities and held a series of workshops in April of last year. The FAA received 1,526 comments from the Step Two workshops, almost all of them regarding noise and flight path concerns. The City of Scottsdale spent a significant amount of time and money to study and present alternatives to these newly proposed routes. In its response this past January, the FAA summarily rejected the proposals, stating that they would decrease safety and cause conflicts with other air traffic with no detailed explanation. The FAA also stated that it “intends to continue the dialogue with local stakeholders about issues that are of interest to them, as we do in communities throughout the United States.”

It has been six months since the FAA’s response and the Agency has not yet initiated any dialog.
Question 1. When and how will the FAA begin substantive discussions with citizens of impacted communities regarding this longstanding concern?

Answer. The FAA appreciates the City of Scottsdale’s thoughtful participation in the Step Two workshops, which were conducted as part of an agreement with the City of Phoenix and groups representing historic neighborhoods in Phoenix. The FAA complied with the terms of the agreement by implementing nine replacement west-bound departure procedures, which were the subject of a recently decided lawsuit, City of Phoenix, Arizona v. Huerta, 869 F. 3d 963 (D.C. Circuit 2017). “Step Two” of that process was designed to solicit information from the public that could be considered if, and when, the FAA began to modernize and improve the safety and efficiency of other aspects of that regional airspace. As part of the two-step process outlined in the agreement, the FAA conducted six public workshops and solicited public comments on two occasions.

Although Step Two of that information-gathering process successfully concluded without FAA publishing any new air-traffic procedures, the FAA considered all of the public comments it received, including the proposal from the City of Scottsdale. The FAA’s “Summary of Step Two Comments,” which was issued on January 10, 2020, listed some of the reasons the FAA had concerns with Scottsdale’s proposals. Subsequently, the City of Scottsdale filed a lawsuit against the FAA, which is currently pending in the U.S. Court of Appeals for the D.C. Circuit.

The FAA has since met twice with the City of Scottsdale. During those meetings, the FAA discussed the City’s proposals and further explained why FAA believed they were not viable due to concerns about their safety and efficiency. The FAA continues to strive for ever-increasing safety and efficiency of the national airspace, and to this end anticipates eventually proposing some procedure changes similar to those notional concepts shown to the public during the 2019 workshops.

Those changes are being considered by the FAA for their potential to enhance safety and efficiency, however the City of Scottsdale noted in their May 23, 2019 comments on FAA’s Step Two process that “the FAA’s Concept 1 is a step in the right direction” from the City’s point of view. At the same time, FAA also received comments from other members of the public that did not support the notional concepts. These proposals are in the very preliminary stages, and any further development would first require the FAA to convene a Full Working Group pursuant to FAA Order 7100.41, Performance Based Navigation Implementation Process. As explained in the order, the working group would include airport authorities affected by the procedure changes, which would include both Phoenix and Scottsdale. FAA would look to the airport authorities to represent community interests and concerns during the working group’s deliberations. In addition, FAA would provide opportunities for communities to engage in the process, seeking input from airport authorities and the local communities to understand the communities’ challenges. The time-frame for any working group to convene, design air-traffic procedures, and begin implementation, is extremely long due to limited resources and the significant staffing constraints resulting from the COVID–19 public health emergency. Any future air-traffic procedures proposed as a result of that process will be developed in full compliance with the National Environmental Policy Act and the FAA’s own processes for public engagement prior to implementation.

Question 2. Is the FAA committed to considering changes that will provide some resolution to the citizens communities impacted by noise from eastbound departures?

Answer. In FAA’s enabling statute, 49 U.S.C. § 40101, Congress directed the FAA to provide the safest, most efficient aerospace system in the world. Congress conferred the FAA with exclusive jurisdiction over the airspace to accomplish this mission. When the FAA implements air traffic procedures in pursuit of this mission, it must therefore prioritize the safety and efficiency of the National Airspace System. As part of its work, the FAA engages with communities across the Nation and considers the input it receives. As an example, the FAA provides support to roundtables that represent communities surrounding airports, and considers recommended changes endorsed by these groups.

With respect to the eastbound departures implemented in 2014 at Phoenix Sky Harbor International Airport, the FAA completed an environmental review before implementing those procedures. The noise analysis supporting that environmental review concluded the procedures did not have the potential to cause any significant noise impacts. When the FAA refers to “significant impact” it is a reference to an objective legal standard. It is not FAA making a subjective statement about how any one person may perceive any type of noise.

As mentioned above, FAA may propose additional changes to procedures at Phoenix Sky Harbor International Airport to improve the safety and efficiency of aircraft operations. A portion of those changes could affect eastbound departures and may
also reduce some of the aircraft operations over Scottsdale. The working group that designs any such procedures will include representatives from both the Scottsdale and Phoenix Airports. Once those procedures are designed, they will be subject to environmental review and will be made available to the public prior to implementation.

It is important to note that procedure changes can change the location of noise from aircraft operations, but they do not eliminate the noise itself. One purpose of the environmental review process will be to determine whether, and to what extent, the aircraft noise is being shifted to a different community.

During the NextGen Advisory Committee (NAC) meeting held this past December in McLean, VA, your Director of Air Traffic Operations in the FAA Western Service Area (Ms. Kim Stover) stressed the importance of "strategic engagement with communities." Community engagement and related noise concerns were made a standing agenda item for future NAC meetings. The NAC also reiterated that FAA's Regional Administrators should lead the community engagement team in their regions by supporting Community Roundtables and Congressional meetings.

Question 3. Do you support frequent and effective community engagements with Arizona communities as FAA seeks to implement NextGen procedures there?

Answer. Absolutely yes. The FAA values engagement with communities across the Nation as it implements procedure changes, including in Arizona. In 2018, as part of an agreement with the City of Phoenix, FAA replaced nine departure procedures that were at issue in *City of Phoenix, Arizona v. Huerta*, 869 F. 3d 963 (D.C. Circuit 2017). Prior to implementing those procedures, the FAA prepared a noise screening analysis report to determine the noise impact of those procedures. The noise analysis concluded the procedures requested by the City of Phoenix would not result in a significant noise impact relative to the no action scenario. Even though an environmental impact statement was not required, the FAA shared the results of its environmental review with the public, held three workshops, and invited comments before implementing the procedures.

Following the implementation of those procedures, the FAA held three more workshops to discuss the effectiveness of those procedures and invite comments on the potential for additional airspace changes. Although the FAA decided in January 2020 not to take any additional action as part of its agreement with the City of Phoenix and various historic groups, that decision does not preclude the agency from continuing to advance its mission to improve the safety and efficiency of the airspace above Phoenix and surrounding communities. The FAA has since met twice with the City of Scottsdale to discuss the possibility of future air-traffic procedure changes, even before any formal process has established what those air-traffic procedures might look like. However, as noted above, we are in very preliminary stages and intend to engage the affected airports authorities and local communities throughout the process.

In the years since 2012, when Congress directed FAA to expedite implementation of Performance Based Navigation procedures nationwide, the FAA has developed a comprehensive and effective public engagement strategy that exceeds the agency's legal obligations under the National Environmental Policy Act and Administrative Procedure Act. These policies are explained on the agency's website: https://www.faa.gov/air_traffic/community_involvement/. FAA will continue to use and refine those approaches in the coming years, and looks forward to continuing its community engagement efforts in Arizona and across the country.

Question 4. Is the FAA considering lowering or altering its threshold for "significant noise" from 65 to 60 day-night average sound level or reducing in all residential areas to 55 DNL? If not, why not?

Answer. The FAA defines significant noise exposure to residential land use as DNL 65dB. This threshold is based on Federal land use policy guidelines; codified under 14 CFR Part 150 and adopted for purposes of defining the significant noise impact criteria for assessment of Federal actions under National Environmental Policy Act (NEPA). In the 2018 FAA Reauthorization Act, we were asked to evaluate alternative metrics to current average day-night level standard, such as use of actual noise sampling to address community airplane noise concerns. Please review our FAA Reauthorization Act of 2018: Section 188 Report to Congress for the results of that effort.1

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1 https://www.faa.gov/about/plans_reports/congress/media/Day-Night_Average_Sound_Levels_COMPLETED_report_w_letters.pdf
Question 5. Does the FAA have a legal duty to protect the residents who live under flight paths from aircraft noise created by the FAA's changes to flight procedures at Phoenix Sky Harbor airport?

Answer. Title 49, U.S. Code, section 40103(b) addresses "the use of the navigable airspace" and provides in subsection (b)(2) that "[t]he Administrator shall prescribe air traffic regulations on the flight of aircraft (including regulations on safe altitudes) for . . . protecting individuals. . . . on the ground." Title 49, U.S. Code, section 40101(a) states, in pertinent part: "To relieve and protect the public health and welfare from aircraft noise, the Administrator of the Federal Aviation Administration, as he deems necessary, shall prescribe . . . regulations to control and abate aircraft noise." Under both of these statutory provisions, the FAA has discretion to determine what, if any, regulations are warranted in particular circumstances.

Environmental considerations, including the potential impacts of aircraft noise from air traffic procedures, are a concern that the FAA takes seriously. When the FAA creates or amends air traffic procedures, it is required to comply with the National Environmental Policy Act (NEPA), as well as implementing regulations issued by the Council on Environmental Quality, and FAA's own NEPA procedures set forth in FAA Order 1050.1F, Environmental Impacts: Policies and Procedures. These procedures require the analysis, and in many cases disclosure, of impacts in a range of environmental impact categories, including noise.

Under NEPA, if an air traffic procedure proposed by FAA would cause a "significant" increase in noise, FAA must first prepare an "environmental impact statement." FAA's NEPA procedures define a "significance threshold" for noise. Specifically, as set forth in FAA Order 1050.1F (Exhibit 4–1), an action would cause a significant noise impact if it would increase noise by DNL 1.5 dB in an area that is or would be exposed to noise above the DNL 65 dB level. An environmental impact statement must consider reasonable alternatives to the agency's proposal and consider input from the public. Although FAA has a legal duty under NEPA to consider reasonable alternatives to proposed actions that would have a significant noise impact, NEPA does not impose a duty to select the alternative with the least noise impact, nor does it impose a duty to mitigate noise impacts.

In 2014, FAA proposed a number of procedure changes at Phoenix Sky Harbor Airport. As part of its NEPA review for those procedures, FAA prepared a noise screening analysis report to assess the environmental impact of those procedures. The noise screen concluded that the procedures would not cause a significant noise impact. More recently, in 2018, as part of an agreement with the City of Phoenix, FAA replaced nine departure procedures that were at issue in City of Phoenix, Arizona v. Huerta, 869 F. 3d 963 (D.C. Circuit 2017). Prior to implementing those procedures, FAA prepared another noise screening analysis report to determine the noise impact of those procedures. The noise analysis again concluded that the procedures requested by the City of Phoenix would not result in a significant noise impact relative to the no action scenario. Even though an environmental impact statement was not required, FAA shared the results of its environmental review with the public and invited comments, which were considered by FAA, before implementing the procedures.

Question 6. Does the FAA have the legal authority to mandate that all passengers and crew wear masks on commercial passenger flights during the pandemic? Has your staff performed a legal analysis? If yes, will you share that legal analysis?

Answer. The FAA is responsible for promoting safe flight of civil aircraft in air commerce. Aviation safety is its mission. While the FAA remains steadfast in its focus on safety of flight during the COVID–19 public health emergency, it is not a public health agency. Applicable statutes and case law do not provide the FAA with a clear mandate or guidance on protecting crewmember or passenger health with measures that are not directly related to the safety of flight. Therefore, the FAA would need to find a nexus between aviation safety and public health in order to use its legal authority to institute a mandate to wear face coverings on commercial passenger flights during the COVID–19 public health emergency. In the past, the FAA has not used its aviation safety authority in prior public health emergencies to address public health concerns that do not threaten safety of flight. Using FAA safety authorities to address public health issues related to communicable diseases would be a significant policy change and expansion of the FAA’s jurisdiction. The FAA has limited public health expertise and relies upon U.S. government public health agencies with that expertise to determine what public health actions might be appropriate. Through the COVID–19 public health emergency, the FAA has provided its aviation safety expertise to such agencies in review of their public health guidelines that could apply in an aviation environment. The FAA has collaborated
with and looks to those agencies for promulgation of guidance and regulations on public health for passengers and crewmembers.