



Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington DC 20515

Peter A. DeFazio
Chairman

Katherine W. Dedrick
Staff Director

Sam Graves
Ranking Member

Paul J. Sass
Republican Staff Director

February 11, 2022

The Honorable Eric J. Soskin
Inspector General
U.S. Department of Transportation
1200 New Jersey Ave SE, 7th Floor
Washington, D.C. 20590

Dear Inspector General Soskin:

We write with concern about the Federal Aviation Administration's (FAA) reluctance to consider civil enforcement actions against Boeing and/or responsible individuals regarding FAA's oversight of the 737 MAX. Specifically, on November 29, 2021, we wrote, along with Representative Greg Stanton, to FAA Administrator Steve Dickson, requesting details about FAA's work on two issues in particular, to which we received a disappointing response on January 24, 2022. Copies of both letters are enclosed for your convenience.

Regarding the issues themselves, we are concerned FAA did not substantively respond to (1) Boeing's knowing production of 737 MAX airplanes that did not conform to its approved type design while concealing the nonconformity for more than a year, and (2) evidence of a plan within Boeing, uncovered by our committee's investigation, to downplay the significance of the Maneuvering Characteristics Augmentation System (MCAS) to anyone outside of Boeing—a plan which involved several individuals, including at least one Authorized Representative (AR), who is a Boeing employee authorized to conduct work on behalf of the FAA. As you may recall, MCAS was one of the primary systems that led to two 737 MAX crashes, killing a combined 346 people.

We respectfully request that you review FAA's refusal to exercise proper oversight over Boeing's apparent misconduct, as detailed below.

Angle of Attack (AOA) Disagree Alert

As described in our November 29, 2021, letter, when Boeing first discovered that the AOA Disagree alert was inoperable on more than 80 percent of 737 MAX aircraft, Boeing continued to produce 737 MAX planes with the inoperable alert, in violation of its approved type design, and concealed the nonconformity from FAA, airline customers, and MAX pilots for more than a year.¹

¹ House Transportation & Infrastructure Committee, *Final Committee Report on the Design, Development & Certification of the Boeing 737 MAX*, September 16, 2020, pp. 122 – 137, accessed here: <https://transportation.house.gov/imo/media/doc/2020.09.15%20FINAL%20737%20MAX%20Report%20for%20Public%20Release.pdf>

Boeing did not ultimately divulge the problem until after a fatal Lion Air 737 MAX crash, when the AOA sensors came under heavy public scrutiny.²

In a July 11, 2019, letter, then-Acting FAA Administrator Dan Elwell explained that although the AOA Disagree alert was not necessary to meet FAA regulations, “once it was made part of the approved type design, it was required to be installed and functional on all 737 MAX airplanes Boeing produced.” A copy of this letter is also enclosed for your convenience.

In response to our November 29, 2021, letter, Administrator Dickson stated, “When Boeing identified that 737 MAX airplanes were delivered with nonconformities, they followed their approved quality system process . . . Boeing communicated the issue to the customers who had opted for the AOA disagree option installed on their airplanes. The FAA took no action against the Organization Designation Authorization unit members since they followed their approved process.”³

This response is problematic for two reasons. First, Administrator Dickson did not address the fact that Boeing did NOT communicate the issue to customers despite having knowledge of it for more than a year, and then only did so after the first deadly 737 MAX crash. Second, the blatant lack of enforcement actions against such non-compliance in this case could encourage manufacturers to ignore their approved type design in the future. Fortunately, the *Aircraft Certification, Safety, and Accountability Act* provides FAA with additional enforcement mechanisms for nonconformities with type design.

Boeing Efforts to Downplay MCAS

During our committee’s investigation, we uncovered an alarming internal Boeing record, documenting a 2013 meeting in which individuals appear to have hatched an explicit plan to avoid using the term “MCAS” with anyone outside of Boeing because, “If we emphasize MCAS is a new function there may be greater certification and training impact.”⁴ The plan called for referencing MCAS to outsiders as merely an addition to the already existing Speed Trim system. Based on the document, the plan involved several individuals, including an AR.

The document even suggests the plan was to be executed in an upcoming technical familiarity presentation to the European Union Aviation Safety Agency (EASA)—“Make sure EASA Fam Tech presentation is consistent with intent that MCAS is an addition to Speed Trim.”⁵

² Id. See also testimony of Dennis Muilenburg and John Hamilton at hearing titled, “The Boeing 737 MAX: Examining the Design Development, and Marketing of the Aircraft,” House Committee on Transportation and Infrastructure, U.S. House of Representatives, 116th Congress, First Session, October 30, 2019, pp. 108 – 109, accessed here: <https://www.govinfo.gov/content/pkg/CHRG-116hhrg38282/pdf/CHRG-116hhrg38282.pdf>

³ Letter from FAA Administrator Dickson to Chair DeFazio, Chair Larsen and Rep. Stanton, January 24, 2022, enclosed.

⁴ See attachment to November 29, 2021, letter from Chair DeFazio, Chair Larsen, and Rep. Stanton, enclosed. The document can also be found on p. 96 of House Transportation & Infrastructure Committee, *Final Committee Report on the Design, Development & Certification of the Boeing 737 MAX*, September 16, 2020, accessed here: <https://transportation.house.gov/imo/media/doc/2020.09.15%20FINAL%20737%20MAX%20Report%20for%20Public%20Release.pdf>

⁵ Id.

In response to the November 29, 2021, letter which asked for more specific information about FAA's investigation and/or civil enforcement efforts regarding the plan to downplay MCAS, Administrator Dickson responded, "FAA actions focused on the safety of the product and the acceptability of the system for return to service. Due to the U.S. Department of Justice investigation as well as the work of the Joint Authorities Technical Review and Special Committee, the FAA *did not pursue investigations or actions* [emphasis added] against the individuals within the Boeing Company."⁶

Administrator Dickson's invocation of the Joint Authorities Technical Review (JATR) and Special Committee as an excuse for FAA declining to investigate the 2013 document is baffling. JATR completed its work in October 2019, before the 2013 meeting minutes came to light. Moreover, we specifically addressed JATR's findings in our November 29, 2021, letter and JATR did not address the 2013 document or FAA's failure to investigate or hold anyone accountable for what it appears to show. Regarding the Special Committee, that body looked at FAA's aircraft certification process and did not address the 2013 meeting minutes. We fail to comprehend how the existence of either of these two reports would prohibit FAA from investigating the 2013 meeting minutes, much less taking appropriate civil enforcement action, if warranted.

Administrator Dickson's invocation of the Department of Justice's (DOJ's) investigation is also confusing. FAA has an independent duty to conduct investigations and civil enforcement, when warranted. While obviously FAA should avoid taking action that could impair DOJ's work, we do not believe FAA is permanently preempted from taking action on any issue in which DOJ also takes an interest.

Taking into account the above, we request that your office:

1. Review and evaluate FAA's actions, or lack thereof, described in the matters outlined above;
2. Assess whether FAA's actions, or lack thereof, followed applicable statutes, regulations, policies, and procedures; and
3. Identify any legal or regulatory hurdles which precluded FAA from investigating and/or pursuing civil enforcement relating to either of those matters.

We are confident that the results of this review will be of great interest to this committee as it continues to oversee FAA and prepares for FAA reauthorization legislation next year.

⁶ Letter from FAA Administrator Dickson to Chair DeFazio, Chair Larsen and Rep. Stanton, January 24, 2022, enclosed.

Sincerely,



PETER A. DeFAZIO
Chair



RICK LARSEN
Chair
Subcommittee on Aviation

Encl.

cc: The Honorable Sam Graves, Ranking Member
Committee on Transportation & Infrastructure

The Honorable Garret Graves, Ranking Member
Subcommittee on Aviation



Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington DC 20515

Peter A. DeFazio
Chairman

Katherine W. Dedrick
Staff Director

Sam Graves
Ranking Member

Paul J. Sass
Republican Staff Director

November 29, 2021

The Honorable Stephen M. Dickson
Administrator
Federal Aviation Administration
800 Independence Avenue S.W.
Washington, D.C. 20591

Dear Administrator Dickson:

Thank you for testifying before the House Committee on Transportation and Infrastructure's Subcommittee on Aviation last month. We appreciate the FAA's ongoing work to implement the *Aircraft Certification, Safety, and Accountability Act* (ACSAA) to hold Boeing and other aviation manufacturers accountable and to ensure the agency has the expertise and processes in place to perform effective safety regulation and oversight. However, during the hearing, two issues arose regarding your recollection of Boeing's past actions in which we would like to receive a more complete account from FAA.

Angle of Attack Disagree Alert

The first issue, as raised by Rep. Sharice Davids, concerns Boeing's actions regarding the Angle of Attack (AOA) Disagree alert. As documented in our September 2020 investigative report, in August 2017 when Boeing first discovered that this alert was inoperable on more than 80 percent of 737 MAX aircraft, Boeing decided to wait nearly three years to fix the problem so it could execute the fix as a part of its then-planned rollout of the 737 MAX-10 in 2020.¹ Boeing also did not notify the FAA, its MAX customers, or MAX pilots that the alert was not working and continued to manufacture hundreds of more 737 MAX aircraft with the same non-functioning alert.² Boeing failed to divulge the fact that the alert was not functioning until October 2018, only **after** the fatal Lion Air crash.³

¹ House Transportation & Infrastructure Committee, *Final Committee Report on the Design, Development & Certification of the Boeing 737 MAX*, September 16, 2020, pp. 122 – 137, accessed here: <https://transportation.house.gov/imo/media/doc/2020.09.15%20FINAL%20737%20MAX%20Report%20for%20Public%20Release.pdf>

² Id. See also testimony of Dennis Muilenburg and John Hamilton at hearing titled, "The Boeing 737 MAX: Examining the Design Development, and Marketing of the Aircraft," House Committee on Transportation and Infrastructure, U.S. House of Representatives, 116th Congress, First Session, October 30, 2019, pp. 108-109, accessed here: <https://www.govinfo.gov/content/pkg/CHRG-116hhrg38282/pdf/CHRG-116hhrg38282.pdf>

³ Id.

Boeing defended its actions by saying this was not a safety issue, and they highlighted the fact that a Boeing Authorized Representative, an individual authorized to perform work on behalf of the FAA, concurred with Boeing's decision to delay the fix.⁴ However, the nonfunctioning AOA Disagree alert appears to have violated the 737 MAX type design. As then-Acting Administrator Dan Elwell said in a letter to our committee in July 2019:

Once certified by the FAA, *all* features included on the airplane become part of the certified type design or approved type design. These features are **mandatory** in each airplane produced to that type design thereafter, whether or not they are required for safety . . . **Although an AOA disagree message was not necessary to meet FAA safety regulations, once it was made part of the approved type design, it was required to be installed and functional on all 737 MAX airplanes Boeing produced.**⁵ [Emphasis added.]

Our committee highlighted this issue, and Boeing's action, in our investigative report on the 737 MAX not because we believed it was a safety issue, but because it was clearly a glaring issue of lax accountability and oversight. Yet, to date, we are unaware of **any** actions the FAA has taken to hold Boeing accountable for violating the approved type design of the 737 MAX, knowingly continuing to manufacture the aircraft regardless of this known defect and failing to inform your agency—or 737 MAX customers—of this nonfunctioning component on the aircraft until after the Lion Air crash.

Boeing has claimed its senior leadership was unaware of these issues at the time. However, our report showed that multiple individuals across the company were aware of this issue. If Boeing's senior management was unaware of these issues impacting more than 80 percent of the 737 MAX fleet that rolled off its assembly line, then that should have raised serious questions within the company about its ability to manage the production of its commercial aircraft fleet effectively and safely.

Boeing's actions showed an utter disregard for the FAA's regulatory process. We acknowledge that in your testimony you mentioned that you are taking steps to implement and improve your oversight of Boeing. However, our direct questions are:

- What specifically has the FAA done to hold Boeing accountable for deceiving its customers and violating the FAA's regulations by knowingly producing 737 MAX aircraft with nonfunctioning AOA Disagree alerts that resulted in the production of nonconforming aircraft **prior to** the Lion Air crash?

Please be specific in your response and provide all records that indicate **any** actions the FAA took against Boeing in regard to the issues outlined above. As part of your response, please also inform the committee of whether the Boeing Authorized Representative who concurred with Boeing's decision to delay fixing the AOA Disagree alert for three years is still authorized to conduct work on behalf of the FAA.

⁴ Id.

⁵ Letter from then-Acting FAA Administrator Dan Elwell to Chair DeFazio, July 11, 2019

Boeing Efforts to Downplay MCAS

The second issue raised at the October 21, 2021 hearing, by Rep. Greg Stanton, concerns the degree of FAA's awareness about efforts within Boeing to downplay MCAS.

As you know, in January 2021, the U.S. Department of Justice (DOJ) entered into a deferred prosecution agreement with Boeing in which Boeing admitted that, "through two of its 737 MAX Flight Technical Pilots," Boeing deceived the FAA AEG about MCAS,⁶ and more recently DOJ announced an indictment against former Boeing Chief Technical Pilot Mark Forkner for deceiving the FAA about MCAS.⁷ The DOJ determined that an independent compliance monitor was unnecessary for its deferred prosecution agreement for several reasons, including their conclusion that, "the misconduct was neither pervasive across the organization, nor undertaken by a large number of employees, nor facilitated by senior management..."⁸

At the hearing last month, Rep. Stanton referenced a Boeing internal document from 2013 uncovered as part of our committee's investigation, a copy of which is enclosed for your convenience. This document, which summarizes the minutes of an internal Boeing meeting, details an explicit plan by multiple Boeing employees to downplay MCAS externally, including to regulators. The rationale for doing so was laid out explicitly in the document, which said, "[i]f we emphasize MCAS is a new function, there may be a greater certification and training impact."⁹ This set a plan in motion to limit the use of the MCAS nomenclature externally and to downplay the system as "new," by describing it as "an addition to Speed Trim." A Boeing Authorized Representative signed off on the plan.

The document shows that multiple individuals were involved in this plan and does not identify any of them as technical pilots, which was the job description of those identified in recent DOJ filings. In addition, we know from our committee's investigation that the Chief Project Engineer on the 737 MAX acknowledged that achieving "Level B" (non-flight simulator) training requirements for pilots or less was a "design objective" of the 737 MAX program.¹⁰ This was a directive designed and enforced by Boeing's senior most management and, as our report showed, it had ripple effects throughout the MAX program. This "design objective" combined with the 2013 meeting minutes help to highlight the fact that there were multiple efforts at Boeing from the top of the company on down that emphasized both the critical importance of avoiding flight simulator training as an FAA requirement and the fact that full and clear knowledge of MCAS by external parties, including regulators, could jeopardize that corporate goal.

⁶ DOJ press release, January 7, 2021, accessed here: <https://www.justice.gov/opa/pr/boeing-charged-737-max-fraud-conspiracy-and-agrees-pay-over-25-billion>

⁷ DOJ press release, October 14, 2021, accessed here: <https://www.justice.gov/opa/pr/former-boeing-737-max-chief-technical-pilot-indicted-fraud>

⁸ DOJ press release, January 7, 2021, accessed here: <https://www.justice.gov/opa/pr/boeing-charged-737-max-fraud-conspiracy-and-agrees-pay-over-25-billion>

⁹ See enclosed document, which can also be found on p. 96 of House Transportation & Infrastructure Committee, *Final Committee Report on the Design, Development & Certification of the Boeing 737 MAX*, September 16, 2020, accessed here: <https://transportation.house.gov/imo/media/doc/2020.09.15%20FINAL%20737%20MAX%20Report%20for%20Public%20Release.pdf>

¹⁰ Transcribed Interview of Michael Teal, May 11, 2010, p. 19, accessed here: [https://transportation.house.gov/imo/media/doc/FINAL%20Michael%20Teal%20\(Boeing\)%20Transcript%20and%200Exhibits%20and%20Attachment%20\(9.9.20\).pdf](https://transportation.house.gov/imo/media/doc/FINAL%20Michael%20Teal%20(Boeing)%20Transcript%20and%200Exhibits%20and%20Attachment%20(9.9.20).pdf)

After describing the 2013 document, Rep. Stanton asked if you were aware of anyone at Boeing, other than the two technical pilots referenced in DOJ's deferred prosecution agreement, who tried to downplay the significance of MCAS to regulators. You responded, "I am not aware of any particular individuals." When Rep. Stanton followed up to ask you whether you believe there were more than two Boeing employees who tried to downplay the significance of MCAS, you said, "I believe that MCAS should have been included in the materials and that it was a safety critical system. Whether there was any intentionality on the part of others I can't speak to."¹¹ We believe the attached document makes it abundantly clear that there was an intentional plan to downplay the significance of MCAS to regulators by multiple individuals at Boeing.

As you recall, the issue was not just *whether* FAA was aware of MCAS, but how MCAS was presented to the FAA. According to the Joint Authorities Technical Review (JATR), which was convened by your agency to review the 737 MAX crashes:

The FAA was not completely unaware of MCAS; however, because the information and discussions about MCAS were so fragmented and were delivered to disconnected groups within the process, it was difficult to recognize the impacts and implications of this system. If the FAA technical staff had been fully aware of the details of the MCAS function, the JATR team believes the agency likely would have required an issue paper for using the stabilizer in a way that it had not previously been used. MCAS used the stabilizer to change the column force feel, not trim the aircraft. This is a case of using the control surface in a new way that the regulations never accounted for and should have required an issue paper for further analysis by the FAA. If an issue paper had been required, the JATR team believes it likely would have identified the potential for the stabilizer to overpower the elevator.¹²

While we appreciate FAA's current efforts to implement the ACSAA and the recommendations of the JATR, which will help to enhance FAA's oversight of Boeing and will improve the accountability of Boeing employees or others who endanger the safety of the flying public in the future, we are deeply troubled by the absence of rigorous accountability for Boeing's past transgressions related to the 737 MAX and the FAA's failure to hold those who violated the public's trust accountable. We must continue to move forward on improving the safety of our nation's aviation certification process, while at the same time not losing sight of past missteps or misdeeds.

We would like to know what, if any, actions FAA has taken to evaluate and investigate the efforts by Boeing to downplay MCAS, particularly to U.S. and foreign regulators. We are not asking you to rehash the efforts FAA has taken to establish JATR or other bodies to review the certification process or the MAX accidents, or what Boeing ultimately disclosed to FAA about

¹¹ Video of Rep. Stanton's exchange with Administrator Dickson can be found beginning at 1:55:55 here: <https://transportation.house.gov/committee-activity/hearings/three-years-after-lion-air-610-faa-implementation-of-the-2020-aircraft-certification-safety-and-accountability-act>

¹² Joint Authorities Technical Review, pp. 13-14, accessed here: https://www.faa.gov/sites/faa.gov/files/2021-08/Final_JATR_Submittal_to_FAA_Oct_2019.pdf

MCAS. We are interested in any actions by the FAA to hold individuals accountable for their actions.

- Has the FAA identified the Authorized Representative who concurred with the plan to downplay MCAS?
 - If so, has the FAA interviewed this individual and/or requested related documents?
 - Is this Authorized Representative still authorized to conduct work as a Boeing ODA Unit Member on behalf of the FAA?
 - Please provide the committee with copies of all records related to the FAA's efforts, if any, regarding the above questions.

- Did the FAA ever investigate the circumstances or individuals involved in Boeing's 2013 plan to downplay MCAS?
 - Please provide the committee with copies of all records related to the FAA's efforts, if any, regarding the above question.
 - What, if anything, has FAA done to hold any of the individuals at Boeing accountable who took part in Boeing's 2013 efforts to downplay MCAS?
 - Please provide the committee with copies of all records related to the FAA's efforts, if any, regarding the above question.

- Does FAA regard the actions memorialized in the enclosed Boeing document as acceptable?

Thank you for your time in addressing these important matters. Please provide a response to this letter by Monday, December 13, 2021. We look forward to continuing to work with the FAA to implement the ACSAA to improve safety, oversight, and accountability. With continuing issues with the Boeing 737 MAX and the 787, and the ongoing certification of the Boeing 777X, it is more critical than ever that the FAA takes its role as regulator seriously. FAA must fully investigate actions by Boeing or others that jeopardize the public's safety or disregard FAA's regulations, and hold responsible parties accountable. Our hope is that with continued implementation of the ACSAA, issues like those discussed above do not arise in the future.

The Hon. Stephen M. Dickson

November 29, 2021

Page 6

Sincerely,



PETER A. DeFAZIO
Chair



RICK LARSEN
Chair
Subcommittee on Aviation



GREG STANTON
Member
Subcommittee on Aviation

Encl.

cc: The Honorable Sam Graves, Ranking Member
Committee on Transportation & Infrastructure

The Honorable Garret Graves, Ranking Member
Subcommittee on Aviation

View Item:

[\[ITRACS Main Menu\]](#) [\[View Verbose\]](#) [\[View Threaded\]](#) [\[View Compressed\]](#) [\[View Summary\]](#) [\[View Alt Format\]](#) [\[Set Flag\]](#) [\[Action Request\]](#)

6-FEB-2020 14:33:39

[37MAXFCI-PDR AI22](#)

Item Header:

Title: MCAS/Speed Trim
Primary Resp Person:
Secondary Resp Person:

Fix Need Date: 01-JUL-2013
ECD:
Phase: CLOSED Item is resolved, no further action required
Model: 737 MAX -8

Information Last Modified: 27-JUN-2013 10:46:49 US(Pacific)

Item Progress:

Date	Resp Person	Type	Attachments	Last Updt (USPac)
21-MAY-2013	<input type="text"/>	ORIG	N	24-MAY-2013 08:38:21

Problem Statement: Every new buzzword represents a company and airline cost via changed manuals, changed training, changed maintenance manuals.

Recommended Action: Investigate deletion of MCAS nomenclature and cover under the umbrella of 'revised speed trim'.

07-JUN-2013	<input type="text"/>	ANALYSIS	N	07-JUN-2013 08:29:23
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6/7/13 Meeting Minutes:

- 1) GTTA left the name as MCAS but treated as analogous function as a speed trim type function.
- 2) If we emphasize MCAS is a new function there may be a greater certification and training impact.
- 3) Treat as an addition to Speed Trim.
- 4) Externally we would communicate it is an addition to Speed Trim.
- 5) Internally continue using the acronym MCAS (within variable names etc).
- 6) Work with AR on certification perspective to ensure this strategy is acceptable.
- 7) Make sure EASA Fam Tech presentation is consistent with intent that MCAS is an addition to Speed Trim.

07-JUN-2013	<input type="text"/>	PROP_RES	N	21-JUN-2013 09:25:42
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After speaking with the Autoflight AR, concurrence was provided that we can continue to use the MCAS nomenclature internally (variable names, etc) while still considering MCAS to be an addition to the Speed Trim function. This will allow us to maintain the MCAS nomenclature while not driving additional work due to training impacts and maintenance manuals.

27-JUN-2013	<input type="text"/>	PROP_RES	N	27-JUN-2013 10:37:24
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Accepting team analysis on keeping MCAS nomenclature. Item can be closed.

27-JUN-2013	<input type="text"/>	CLOSURE	N	27-JUN-2013 10:46:49
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Action Item is complete and is closed.

Cross Reference:

View Item:

Code	Item Type	Ref Item ID	Version
PRG_NTFY	PERSON	<input type="text"/>	
PRG_NTFY	PERSON		
ONE_NTFY	PERSON		
PRG_NTFY	PERSON		
PRG_NTFY	PERSON		
CHG_NTFY	PERSON		
ONE_NTFY	PERSON		



U.S. Department
of Transportation

**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

January 24, 2022

The Honorable Peter A. DeFazio
Chairman, Committee on Transportation
and Infrastructure
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

Thank you for your November 29, 2021, letter, cosigned by your congressional colleagues, seeking information and documents related to the angle-of-attack (AOA) disagree alert and Boeing efforts to downplay Maneuvering Characteristic Augmentation System (MCAS) for Boeing 737 MAX airplanes.

The Federal Aviation Administration (FAA) requires that all systems installed on transport airplanes meet their intended functions. Airplane manufacturers are required to evaluate any function or feature that is part of the FAA-approved design but discovered, after airplane delivery, to be missing from the airplane. Boeing uses an FAA-approved process to review discrepancies as a potential non-compliance or a nonconformance and assess the discrepancy for a near-term and long-term safety impact. The FAA also reviews disclosed nonconformances and non-compliances for their impact on safety and corrective action, regardless of the safety determination.

As previously stated, Boeing implemented the AOA indicator as a customer option on the Boeing 737 Next Generation (NG) airplanes in December 1999. The FAA certified the AOA disagree alert on the 737 NG in July 2006. The design requirements for the indicator and alert carried over to the 737 MAX in support of Boeing's desire to maintain commonality with the 737 NG.

When Boeing identified that 737 MAX airplanes were delivered with nonconformities, they followed their approved quality system processes for reviewing the compliance and safety impact of the nonconformity. The AOA disagree was dispositioned as "non-safety," and no further action was taken. Boeing communicated the issue to the customers who had opted for the AOA disagree option installed on their airplanes. The FAA took no action against the Organization Designation Authorization unit members since they followed their approved process.

In the aftermath of the Lion Air and Ethiopian Airline accidents, the FAA followed our continued operational safety process to correct airplanes delivered with a nonconformance. The FAA grounded the planes, amended the type certificate, and ensured that airplanes previously delivered were fixed to comply with the Airworthiness Directive (AD) issued November 18, 2021. Additionally, the FAA has changed our oversight approach for Boeing and is monitoring Boeing's system to ensure the fixes mandated in the AD are reflected in newly produced airplanes. If FAA finds issues, we can use the compliance and enforcement process to request root cause and corrective action.

FAA actions focused on the safety of the product and the acceptability of the system for return to service. Due to the U.S. Department of Justice investigation as well as the work of the Joint Authorities Technical Review and the Special Committee, the FAA did not pursue investigations or actions against individuals within the Boeing Company.

The FAA acknowledges a lack of communication and transparency between the agency and Boeing during the original 737 MAX certification. We also recognize issues involving MCAS, including that MCAS design changes during the certification process were not presented by Boeing in an integrated fashion to the agency and, therefore, did not present a holistic perspective of issues associated with MCAS.

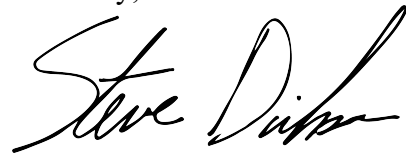
The FAA is committed to implementing the recommendations made by safety experts and committees following 737 MAX accidents, along with the legislative mandates in the 2020 Aircraft Certification, Safety, and Accountability Act. We believe these efforts will improve safety and ensure greater transparency and accountability between the agency and the aviation industry.

Thank you for your continued support of the FAA and its important mission of aviation safety.

An identical letter has been sent to each of the cosigners of your letter.

If I can be of further assistance, please contact me or the Office of Government and Industry Affairs at (202) 267-3277.

Sincerely,

A handwritten signature in black ink that reads "Steve Dickson". The signature is written in a cursive, flowing style.

Steve Dickson
Administrator



U.S. Department
of Transportation

**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, D.C. 20591

July 11, 2019

The Honorable Peter A. DeFazio
Chairman, Committee on Transportation & Infrastructure
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

This is in response to your April 1, 2019, letter seeking information and documents related to the certification of the Boeing 737 MAX aircraft by the Federal Aviation Administration (FAA). This seventh production supplements FAA's document productions on May 9, June 3, June 7, June 13, June 18, and June 28, 2019, continuing our ongoing production of documents and information to the Committee on Transportation and Infrastructure. In addition, this letter includes information partially responsive to your request of June 6, 2019, regarding the functionality of the Angle of Attack (AOA) disagree message on certain Boeing 737 MAX aircraft.

Enclosed are documents you requested relating to the review of the 737 MAX 8 by the European Union Aviation Safety Agency. As we have communicated to your staff, some of these documents contain highly sensitive proprietary business information, some of which are also subject to export control restrictions. The Trade Secrets Act, 18 U.S.C. § 1905, provides criminal penalties for publishing, divulging, or disclosing trade secrets. Disclosure of proprietary business information provided to the FAA could also harm aviation safety by impairing the FAA's ability to obtain similar documents and data from regulated entities in the future. Therefore, we request you treat these documents and the data they contain as confidential.

You also requested information about how the FAA considers, and in some cases requires, the installation of certain features during the aircraft certification process. Required safety standards and features for large aircraft are established in 14 CFR Part 25 ("Airworthiness Standards: Transport Category Airplanes"). Features required to meet those safety standards are mandatory on all FAA-certified large aircraft, including the Boeing 737 MAX. There are no optional safety standards or features.

The AOA display indicator and the AOA disagree message, which you inquired about specifically, are not required under 14 CFR Part 25 because there are no in-flight pilot operational procedures or requisite decisions defined for their use or inoperability. In short, AOA

information is not necessary to operate a Part 25 aircraft safely. However, individual air carriers may elect to install AOA indicators for their operations.

For context, pitch refers to the angle of an airplane relative to level flight, whereas AOA is the angle between the oncoming air and the wing of the aircraft. As the angle of the wing increases in relation to the oncoming path of the air, lift increases and the airplane will fly higher, provided the air flows smoothly over the wing. An AOA sensor or “vane” is a small probe located on the fuselage or the wing of the aircraft that detects the airplane’s AOA in flight and sends that information to the optional display in the cockpit and to the airplane’s flight control system.

The 737 MAX has two AOA sensors: one on each side of the nose of the fuselage. An AOA indicator is a display of the AOA reading on the primary flight display (PFD). The AOA disagree message is displayed on the PFD when readings from the two AOA sensors differ by more than 10 degrees. The primary purposes of PFDs are to show pitch (via the artificial horizon covering most of the screen), airspeed (shown on the left side of the screen), and altitude (shown on the right side of the screen).

Once certified by the FAA, *all* features included on the airplane become part of the certified type design or approved type design. These features are mandatory in each airplane produced to that type design thereafter, whether or not they are required for safety. A manufacturer cannot alter the airplane’s features after it has been certified. If a manufacturer decides to include a new feature for any reason, including optional features, the inclusion of that feature must receive approval by the FAA, and it becomes a required feature and part of the approved type design. Although an AOA disagree message was not necessary to meet FAA safety regulations, once it was made part of the approved type design, it was required to be installed and functional on all 737 MAX airplanes Boeing produced.

In October 2017, Boeing determined that the AOA disagree message was not included on 737 MAX 8 airplanes unless the operator had elected to install the optional AOA indicator. Several airlines chose not to include the AOA indicator option. According to Boeing, “The software delivered to Boeing linked the AOA Disagree [message] to the AOA indicator, which is an optional feature on the MAX and the NG. Accordingly, the software activated the AOA Disagree [message] only if an airline opted for the AOA indicator. When the discrepancy between the requirements and the software was identified, Boeing . . . determined that the absence of the AOA Disagree alert did not adversely impact airplane safety or operation.”¹

In November 2018, following the Lion Air accident on October 29, 2018, Boeing notified FAA officials in Seattle of the inoperative AOA disagree message. The FAA Seattle office then convened a series of Corrective Action Review Boards, which evaluated Boeing’s determination and concurred that the inoperative message was not a safety issue. The FAA was preparing to issue a Special Airworthiness Information Bulletin on the issue when the Ethiopian Airlines crash occurred.²

¹ Press Release, The Boeing Company, Boeing Statement on AOA Disagree Alert (May 5, 2019), *available at* <https://boeing.mediaroom.com/news-releases-statements?item=130431>.

² An SAIB is an information tool that alerts, educates, and makes recommendations to the aviation community.

The Honorable Peter A. DeFazio
Page 3

The FAA is currently reviewing the software update Boeing is preparing to address the inoperability of the AOA disagree message in some 737 MAX aircraft. We are committed to working with the Technical Advisory Board, the Joint Authorities Technical Review for the Boeing 737 MAX, the Special Committee to Review FAA's Aircraft Certification Process, the National Transportation Safety Board, other major international aviation safety authorities (such as the European Union Aviation Safety Agency), the Department of Transportation's Office of Inspector General, and the relevant committees of jurisdiction in Congress to address any recommendations that can further improve aviation safety in the United States and abroad.

An identical letter has been sent to Subcommittee Chairman Larsen. FAA is continuing to work to provide responsive documents to the Committee and will continue to provide responsive documents and information on a rolling basis. If I can be of further assistance, please do not hesitate to contact me or my staff.

Sincerely,



Daniel K. Elwell
Acting Administrator

Enclosures

cc: The Honorable Sam Graves, Ranking Member, Committee on Transportation & Infrastructure

The Honorable Garret Graves, Ranking Member, Subcommittee on Aviation, Committee on Transportation & Infrastructure