

# CONSTANTINE CANNON LLP

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**Eric Havian**  
Partner



September 17, 2019

## **BY FEDEX**

Honorable Steve Dickson  
Administrator, Federal Aviation Administration  
800 Independence Ave., SW  
Washington, DC 20591

Re: Whistleblower Information Regarding Boeing 737 Production Concerns  
and 737 MAX Crashes

Dear Mr. Dickson:

We represent Ed Pierson, a recently retired Boeing Senior Manager who possesses significant information regarding the alarming state of Boeing's 737 Renton, Washington factory in 2018. Mr. Pierson worked within the Production System Support organization and was responsible for overseeing production support for 737 Final Assembly and P-8 manufacturing operations. In 2018 Boeing manufactured hundreds of aircraft at the Renton factory, including both 737 MAX planes that crashed within the last year. Mr. Pierson is gravely concerned that chaotic and rapidly deteriorating factory conditions may have contributed to these tragic crashes and the flying public will remain at risk unless this unstable production environment is rigorously investigated and remedied. As you know, FAA production certification is an integral part of the airplane certification program.

Mr. Pierson's concerns are underscored by the fact, according to publicly available information, that no firm determination has yet been made about the root cause(s) of the faulty Angle of Attack (AOA) Sensors that contributed to both accidents. These devices have a long history of reliability, and it is alarming these sensors failed on multiple flights with two failures resulting in fatal crashes—just a few months after both airplanes were manufactured. The AOA Sensors failed for a reason. Did they fail because they were designed, manufactured, installed, or tested incorrectly? Each of these areas fall under Boeing's manufacturing responsibilities. Simply stating the AOA Sensors sent faulty information to MCAS is a woefully inadequate and evasive conclusion. We suspect this may partially explain why EASA and other international regulators are still understandably concerned about AOA Sensor integrity.

Mr. Pierson's concerns, however, are not limited to the AOA sensors or these tragic crashes. To the contrary, they extend to hundreds of aircraft manufactured over many months, including numerous other planes that have experienced significant safety incidents. For example, there

439522v.1

September 17, 2019

Page 2

have been at least thirteen other incidents involving new MAX airplanes all produced from the same factory during a fourteen-month timeframe. In fact, one of these airplanes was only one month old. The flying public is completely unaware of these other incidents.

The enclosed binder provides documentary evidence that details and substantiates Mr. Pierson's concerns about the 737 MAX production environment and depicts a disturbing sequence of events currently unknown to the public. These documents include Mr. Pierson's recommendation in June 2018—four months before the first crash—to “[s]hut down the production line to allow our team time to regroup so we can safely finish the planes.” Alarmed by numerous metrics showing a dramatic decline in the factory's performance and an unprecedented number of production issues, Mr. Pierson also recommended a thorough engineering and quality analysis to determine if potential risks might need to be communicated to Boeing customers. Mr. Pierson reported his concerns directly to the senior leadership of Boeing's 737 Airplane Program, but Boeing rejected his recommendations.

After Mr. Pierson left Boeing in August, the Lion Air crash confirmed his worst fears. Despite his retirement, Mr. Pierson wrote to Boeing's CEO and later to Boeing's Board of Directors reiterating and amplifying his manufacturing concerns, requesting their assistance in contacting the Boeing employees supporting the Lion Air accident investigation, and proposing urgent action be taken to determine if manufacturing problems contributed to the accident. Boeing's General Counsel spoke with Mr. Pierson on several occasions, eventually asking for Mr. Pierson's recommendations. Mr. Pierson insisted again the production line be stopped and the operating environment within the factory be investigated. Once again, Boeing took no action and declined to shut down production. The tragic Ethiopian Airlines accident followed.

Mr. Pierson next worked tirelessly to bring his concerns to the attention of the accident investigation teams and numerous Federal agencies, including the National Transportation Safety Board (NTSB), the Department of Transportation's Office of Inspector General, and the Department of Justice. After months of effort and unexplainable delays, Mr. Pierson was finally interviewed by an NTSB investigator assigned to the Ethiopian Airlines crash on June 26, 2019. Following that conversation, I wrote directly to NTSB Chairman Robert Sumwalt on June 28, 2019 on behalf of Mr. Pierson and requested the NTSB share all the information he voluntarily provided to the NTSB with the Indonesian and Ethiopian Investigators-In-Charge, as well as with appropriate U.S. agencies.

On August 19, 2019 I received a written response from the NTSB's Managing Director to my June 28 letter stating that “Your client's concerns fall outside the scope of the NTSB's role in the 737 MAX accident investigations.” The NTSB's determination that Mr. Pierson's production concerns are “outside the scope” of the international accident investigations is truly bewildering. Accident investigators routinely review maintenance and training records going

# CONSTANTINE CANNON LLP

SAN FRANCISCO | NEW YORK | WASHINGTON | LONDON

September 17, 2019

Page 3

back years. And yet, two new airplanes crash just months after they were built, and the NTSB unilaterally deems the chaotic and unstable production environment in which they were made to be outside the scope of the accident investigations? We doubt the Indonesian and Ethiopian investigators and international regulators would agree with this determination.

We believe as the new leader of the FAA you may be completely unaware of the facts enclosed in the attached documents. Because the NTSB has not confirmed this information has been shared, we are now sharing these documents with you directly. We ask that you review them carefully, paying particular attention to the timeline and chronology of events. We request you share all this information with the FAA representatives on the two accident investigation teams and the Indonesian and Ethiopian Investigators-in-Charge.

As a data-driven and fact-based organization, the FAA, in concert with the other investigative teams, should be very interested in analyzing the engineering and quality data and manufacturing history of these airplanes. To facilitate such an investigation, Mr. Pierson has provided a list of manufacturing data sources and records, as well as the list of serious incidents involving other 737 MAX planes. Upon request, Mr. Pierson can also identify numerous witnesses that would be able to corroborate his information regarding the factory environment.

Finally, we wish to emphasize that Mr. Pierson is not an alarmist. He has held numerous leadership positions in both the public and private sectors. He honorably served in the military for 30 years to include serving as a Squadron Commanding Officer. But even to Mr. Pierson, the state of the Renton factory was undeniably alarming. He believes that any investigation into the 737 MAX crashes and the long-term safety of aircraft manufactured at the Renton site must include a rigorous examination of the dangerously unstable production environment he witnessed first-hand as a senior manager.

We appreciate your attention to these exceedingly serious issues. Mr. Pierson was heartened by your commitment during your swearing-in remarks to follow the facts, and we trust you will give Mr. Pierson's concerns the due consideration they deserve. Please confirm whether you have reviewed Mr. Pierson's information and shared it with the appropriate stakeholders by September 30th. Mr. Pierson is eager to assist the investigation in any way possible.

Sincerely,



Eric Havian

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SAN FRANCISCO | NEW YORK | WASHINGTON | LONDON

September 17, 2019

Page 4

cc: Elaine L. Chao, U.S. Secretary of Transportation  
Arjun Garg, FAA General Counsel  
H. Clayton Foushee, Director, FAA Office of Audit and Evaluation

Eric Havian  
Partner



October 14, 2019

**BY FEDEX**

Honorable Steve Dickson  
Administrator, Federal Aviation Administration  
800 Independence Ave., SW  
Washington, DC 20591

**Re: Whistleblower Information Regarding Boeing 737 Production Concerns and 737 MAX Crashes**

Dear Mr. Dickson:

On September 17, 2019, we sent you a letter requesting your assistance in connection with the alarming state of Boeing's 737 Renton, Washington factory in 2018, and the possible connection between the chaotic factory conditions and the tragic 737 MAX crashes that killed hundreds of people. In response to the letter, we have received the following communications from the FAA:

1. A voicemail message from Clay Foushee, FAA Director of Audit & Evaluation (since the voicemail, Mr. Foushee has not returned our calls)
2. An automated email from the FAA Hotline on October 1, 2019 with subject line "S20190930021 Safety Hotline - Acknowledgement Ltr"
3. An email from Michael Millage on October 8, 2019 with subject line "FAA Review of Eric Havian Aviation Safety Hotline Report"

Although we appreciate these communications, we believe they are missing the mark. We did not submit a message on the FAA Safety hotline but rather sent you extensive documentary evidence detailing our client's warnings to Boeing leadership about the chaotic and unstable state of the 737 Factory in Renton, Washington and the potential for tragic consequences. Notably, Mr. Pierson warned Boeing leadership *before* the Lion Air accident that it should shut down the production line and then again prior to the Ethiopian Airlines accident. Nevertheless, Boeing leadership—including its General Counsel, CEO, 737 General Manager, and Board of Directors—never acted on Mr. Pierson's warnings and recommendations.

Mr. Pierson is not seeking a limited investigation into one-off process deviations or product defects. Rather, Mr. Pierson's concerns relate to a culture of profit-over-safety that pushed factory workers to the breaking point, led to unprecedented numbers of observed process breakdowns, and produced an inherently unsafe work environment that might have contributed

# CONSTANTINE CANNON LLP

SAN FRANCISCO | NEW YORK | WASHINGTON | LONDON

October 14, 2019

Page 2

to the loss of hundreds of lives. That is why we asked you to share the information we provided with the FAA representatives on the 737 MAX accident investigation teams and the Ethiopian and Indonesian Investigators-in-Charge. The accident investigators are supposed to have access to all relevant information and are responsible for conducting the investigation in accordance with ICAO Annex 13. Please confirm that you have shared this information with these individuals.

Of course, Mr. Pierson is also willing to assist any FAA investigation into the Renton factory. We will respond separately to Mr. Millage's questions, although we do not believe the nature of Mr. Pierson's information can effectively or efficiently be conveyed in writing. Mr. Pierson would welcome the opportunity to speak with Mr. Millage in person or by phone to elaborate on his concerns and address any additional questions. We stress, however, that Mr. Pierson's concerns extend beyond isolated incidents of nonconformance. For months, backlogs, delays, and schedule pressure overwhelmed the workforce at Renton, and virtually every measure of factory health deteriorated to unprecedented lows. These factory conditions posed an unreasonable risk to production quality, and as a result, public safety.

Mr. Pierson is gravely concerned that, despite the loss of hundreds of lives, these issues remain unaddressed and could be exacerbated once the 737 MAX is ungrounded and Boeing rushes to ramp up production and push out completed planes. In addition to sharing Mr. Pierson's information with the relevant investigators, we hope that the FAA will undertake a rigorous examination of the Renton factory to ensure that it does not return to the inherently unsafe conditions Mr. Pierson witnessed first-hand.

We appreciate your attention to this matter. Please contact us with any questions.

Sincerely,



Eric Havian

cc: Elaine L. Chao, U.S. Secretary of Transportation  
H. Clayton Foushee, Director, FAA Office of Audit and Evaluation  
Michael Millage, Management Specialist, FAA Aviation Safety Technical Program

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**Eric Havian**  
Partner



November 5, 2019

## **BY FEDEX**

Honorable Steve Dickson  
Administrator, Federal Aviation Administration  
800 Independence Ave., SW  
Washington, DC 20591

Re: Unsafe Condition on 737 Airplanes Requires Emergency Airworthiness Directive

Dear Mr. Dickson:

We write to call your attention to an urgent matter of public safety in connection with the ongoing investigation of the 737 MAX.<sup>1</sup> Last week on October 28, 2019, the Indonesian government released the Final Aircraft Accident Investigation Report for Lion Air Flight 610 (“Final Accident Report”). Information in the report suggests that there may be hundreds of potentially defective Angle of Attack (“AOA”) sensors installed not only on the grounded 737 MAX, but also on **currently flying 737 NG airplanes and P-8 military airplanes**. An Emergency Airworthiness Directive should be issued immediately to airlines and Boeing requiring them to inspect, test and, if necessary, replace similar model AOA Sensors.

The Final Accident Report states that the AOA Sensor (part number 0861FL1, serial number 21401) made by Rosemount Aerospace (currently Collins Aerospace) that was removed the day before the crash on October 28, 2018 was found to be faulty during testing on December 10, 2018 at a Collins Aerospace facility. It is possible that a similarly faulty AOA sensor was installed on the Ethiopian Airlines Flight 302 airplane that crashed on March 10, 2019.

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<sup>1</sup> On September 17 and October 14, 2019, we sent you letters requesting your assistance in connection with the alarming state of Boeing’s 737 Renton, Washington factory in 2018, and the possible connection between the chaotic factory conditions and the tragic 737 MAX crashes that killed hundreds of people. On October 22, 2019, FAA employee Michael Millage contacted us to coordinate a time to speak with our client, Ed Pierson. We are awaiting Mr. Millage’s availability; Mr. Pierson remains ready and willing to meet with the FAA.

439522v.1

November 5, 2019

Page 2

This part was inspected, installed, and tested by the Boeing Company at its 737 manufacturing plant in Renton, Washington during the summer of 2018.

The Final Accident Report states in pertinent part:

Examination of the AOA sensor revealed an intermittent open circuit in the resolver #2 coil wiring. At temperatures above approximately 60°C, the resolver functioned normally, but did not function below that temperature. (Final Accident Report, p. 37)

The examination concluded that the field failure of the 08-NCW-24YQ resolver was due to a loose loop in the rotor coil magnet wire that had been exposed and encapsulated in the epoxy used to hold the end cap insulator on the rotor. The epoxy caused the magnet wire to adhere to both the end cap insulator and the rotor shaft insulator. Because the CTE of the two insulators differ over 3 times from each other, thermal cycling from normal operation in the field caused the magnet wire to fail in fatigue as expansion and contraction rates and possibly directions differed from each side of the magnet wire. The failure manifested as a temperature dependent intermittent open. Physical examination of the resolver, including continuity tests, CT scans, and SEM imaging, concluded that this was the only magnet wire break in the unit and visual evidence of cracking, arcing, and metal “working” support the CTE theory of fatigue of the magnet wire. (Final Accident Report, p. 287)

This malfunctioning part represents an unsafe condition for other 737 airplanes manufactured during the same timeframe as the Lion Air Flight 610 airplane. This production defect needs to be corrected immediately.

A malfunctioning AOA sensor could result in pilot overload, potentially causing the loss of an airplane. Boeing’s Flight Crew Operations Manual Bulletin No. TBC-19, dated November 6, 2018, describes those effects as follows:

Additionally, pilots are reminded that an erroneous AOA can cause some or all of the following indications and effects:

- Continuous or intermittent stick shaker on the affected side only.
- Minimum speed bar (red and black) on the affected side only.
- Increasing nose down control forces.
- Inability to engage autopilot.
- Automatic disengagement of autopilot.
- IAS DISAGREE alert.
- ALT DISAGREE alert.
- AOA DISAGREE Alert (if the AOA indicator option is installed)

November 5, 2019

Page 3

- FEEL DIFF PRESS light.

To protect the public, the FAA should immediately issue an Emergency Airworthiness Directive requiring airlines and Boeing to inspect, test, and potentially replace model AOA Sensors similar to the one originally installed on the Lion Air Flight 610 airplane. At a minimum, the airplanes that should be inspected include all 737 MAX, 737 NG and P-8 airplanes that were manufactured in the timeframe between the production of the Lion Air Flight 610 airplane during the summer of 2018 and the crash of Ethiopian Airlines Flight 302 on March 10, 2019.

To be clear, immediately issuing an Emergency Airworthiness Directive is only the first step the FAA must take—and it will not solve the underlying problem. A brand-new AOA sensor, inspected and installed by Boeing, should not fail. That it did only underscores the need for a comprehensive investigation into the chaotic and alarming state of Boeing's 737 Renton, Washington factory in 2018. Our client Mr. Pierson is ready and willing to assist the FAA in any way possible.

Sincerely,



Eric Havian

cc: Elaine L. Chao, U.S. Secretary of Transportation  
Arjun Garg, FAA General Counsel  
H. Clayton Foushee, Director, FAA Office of Audit and Evaluation