**UNITED STATES DISTRICT COURT**
**NORTHERN DISTRICT OF ILLINOIS**

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| IN RE THE BOEING COMPANY AIRCRAFT SECURITIES LITIGATION | Case No. 1:19-cv-02394<br><br>Honorable John J. Tharp Jr. |

# CONSOLIDATED CLASS ACTION COMPLAINT

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Lead Plaintiff Public Employees' Retirement System of Mississippi ("MissPERS" or "Lead Plaintiff") and additional Named Plaintiffs (discussed below in Paragraphs 32-35) bring this securities class action on behalf of themselves and all other persons or entities who purchased or otherwise acquired securities of The Boeing Company ("Boeing" or the "Company") during the period from November 7, 2018 to December 16, 2019, inclusive (the "Class Period") and were damaged thereby (the "Class").

## I. PRELIMINARY STATEMENT

1. This securities class action arises from one of the most horrific scandals in recent corporate history – Defendants' misrepresentations regarding Boeing's 737 MAX airliner. The story behind the 737 MAX is an American tragedy, an appalling example of cynical decision-making that valued short-term monetary gain over long-term corporate success and even over human lives.

2. In the years prior to the Class Period, Boeing was concerned about losing market share to its primary competitor, Airbus SE ("Airbus"), as Airbus's new A320neo airliner experienced a wave of commercial success. Boeing responded by rushing the development of its own "new" aircraft, an updated version of the decades-old Boeing 737 called the 737 MAX.

3. Boeing pushed the MAX through design and development at breakneck pace, cutting corners at every opportunity. The Company put tremendous pressure on its employees to suppress safety concerns, misled the Federal Aviation Administration ("FAA"), and made misrepresentations about a powerful software system ("MCAS," defined below) that could take control of the MAX and push its nose down if it sensed that the plane had improperly pitched up and was nearing a stall.

4. Consumed by its race with Airbus, Boeing also ignored multiple warnings from its own employees about a host of dangerous safety issues related to the 737 MAX. As just one

example, in the summer of 2018 a Senior Manager at Boeing – a retired Naval Flight Officer with more than 30 years of aviation experience – wrote to his supervisors stating that "***all my internal warning bells are going off.*** And for the first time in my life, I'm sorry to say that ***I'm hesitant about putting my family on a Boeing airplane.***"[1] As discussed in more detail below, internal documents show that many other Boeing employees were equally frank in expressing their serious concerns about the MAX's safety. Unfortunately, Boeing ignored these warnings and rushed the MAX into service.

5. On October 29, 2018, just a little more than four months after that warning, a brand-new 737 MAX plunged into the Java Sea after takeoff from Jakarta, killing all 189 people aboard. Two minutes after takeoff and unbeknownst to the pilots, MCAS activated and took over the plane. Relying on faulty sensor data, MCAS erroneously deemed that the aircraft's nose was too high and responded by automatically pushing the plane downward. With alarms blaring in the cockpit, the captain and his co-pilot desperately wrenched back on their control sticks with an astonishing 100 pounds of force as the plane rose and fell ***more than 20 times*** in response to multiple MCAS activations.

6. The plane was gradually forced into a steeper and steeper dive as MCAS activated repeatedly to override the pilots. One pilot prayed aloud while the other frantically searched the MAX's flight manual trying to diagnose the problem. But it was no use – as discussed below, Boeing had not informed pilots about the existence of the MCAS system, and it was not even mentioned in the flight manual. Less than twelve minutes after takeoff, Lion Air Flight JT 610 entered a steep dive and crashed into the sea without leaving a single survivor.

[1] All emphasis herein is added unless otherwise indicated. For the Court's convenience, a glossary of key terms is attached at Appendix 1.

7. The Class Period for this securities class action begins one week after the Lion Air Crash. Defendants learned within days that the crash was caused by an erroneous MCAS activation. Defendants also knew that during the development of the MAX there had been widespread safety concerns inside Boeing about the inclusion and capabilities of MCAS, as well as other serious safety issues. They now knew beyond a shadow of a doubt that the 737 MAX had a catastrophic safety deficiency that under certain conditions could cause the plane to crash with enormous loss of life.

8. Defendants also knew, however, that admitting the truth could lead to a slowdown in the production and sale of the MAX because pilots would require additional training and the MCAS system might have to be updated. The delays and bad publicity associated with such an admission could give Airbus a critical edge over Boeing in the cutthroat competition between the two companies.

9. Rather than disclose the truth, Defendants embarked on an aggressive public relations campaign to reassure the public and Boeing investors regarding the safety and financial viability of the MAX. Defendant Dennis Muilenburg ("Muilenburg"), Boeing's Chief Executive Officer, told investors that "the bottom line here is the 737 MAX is a very safe airplane and we're confident in that," claiming that the MAX "behave[d] the same way" as older 737 models. When asked if pilots were told how to address the issues that arose in the Lion Air Crash, Muilenburg falsely stated it was "part of the training manual. It's an existing procedure."

10. Defendants also tried to allay investor concerns that safety issues with the MAX could threaten Boeing's financial performance and business prospects. On November 7, 2018, Defendant Gregory D. Smith ("Smith"), Boeing's Chief Financial Officer, spoke at an investor conference held at the Four Seasons Hotel in Chicago. He stated that strong demand was "really

setting us up for 2019, which will predominantly be MAX aircraft." On November 27, 2018, Boeing issued another public statement providing "***our assurance that the 737 MAX is as safe as any airplane that has ever flown the skies.***"

11. These statements and others made by Defendants during the Class Period were materially false and misleading. The public did not begin to learn the truth until after an equally horrifying ***second*** plane crash just five months after the first. On March 10, 2019, Ethiopian Airlines Flight ET 302 crashed just after takeoff from Addis Ababa, Ethiopia, killing all 157 people on board. Defendants knew almost immediately that MCAS was once again at fault.

12. Yet again, however, Defendants decided to conceal and suppress the truth. Even as the FAA and regulators across the globe cited significant safety concerns and grounded the MAX, Defendants reiterated and reinforced their previous lies. Muilenburg reportedly telephoned the President of the United States to assure him that the MAX was safe and to try to convince him to overrule the FAA. Meanwhile, Boeing released several public statements reiterating that the 737 MAX adhered to "***the highest levels of safety consistent with industry standards***" and that Defendants "do not have any basis to issue new guidance to operators [pilots]." Defendants also assured investors that the MAX would be airborne soon, claiming that it was on "the path to final certification" to be cleared to fly again as soon as April 2019.

13. Over the following months, Defendants continued to mislead the market regarding the safety problems facing the MAX and the anticipated timeline for the plane to return to service. Inevitably, the tight timeline that Defendants touted in the Spring of 2019 slipped as the FAA began to dig deeper into the many safety issues that Defendants already knew about (but in many cases had concealed from the FAA). Given that Defendants knew the gravity of these safety issues and the extent to which they had been concealed from the public and regulators, their repeated

assurances that the MAX soon would be certified to resume flight operations were materially deceptive.

14. Defendants' public statements were so audaciously misleading that Acting FAA Administrator Daniel Elwell held a private meeting with Defendant Muilenburg in June 2019 where he expressly told Muilenburg "to slow down [Boeing's] talk of progress" on returning the MAX to service. Muilenburg agreed in private, stating "You're right. We're not going to push." Shockingly, just a few days later Muilenburg publicly announced during a conference in Aspen that Boeing still expected a "summer 2019" (i.e., one to two month) timeframe for the MAX to return to service. Muilenburg never disclosed his meeting with the FAA.

15. In November 2019, after the "summer 2019" timetable had long passed, Muilenburg had a telephone call with FAA Administrator Stephen Dickson. During the call, Dickson refused to provide Muilenburg with assurances about when the MAX could return to service. Undeterred, Boeing promptly announced that the Company could potentially begin shipping the MAX planes again ***within a month***, sending Boeing's stock price soaring. This statement was false, as revealed to the public on the last day of the Class Period, December 16, 2019, when the FAA made it clear that the agency would not act on Boeing's timeline.

16. The troubling story behind the 737 MAX is made even more disturbing by the many red flags that were raised but ignored during the plane's development. In 2011, faced with the rapid success of Airbus's A320neo, Boeing abandoned plans to develop an entirely new aircraft and decided to upgrade its decades-old 737 with larger, more fuel-efficient engines. Boeing sought expedited FAA approval by amending the "type certificate" already approved by the FAA for Boeing's original 737 plane more than 55 years earlier.

17. Boeing assured its airline customers that the MAX was so similar to older models of the 737 that it would be a seamless transition to the new planes. This meant that the MAX could not be materially different to fly than older 737s. In fact, one of the primary directives given to Boeing engineers was that under no circumstances could the MAX's systems change in such a way that it would require any additional flight simulator training for pilots. Simulator training is expensive and time-consuming, and would cause transition delays and add costs for airlines that upgraded to the MAX.

18. This directive was enforced with vigor inside Boeing. As one of Boeing's chief design engineers stated in an internal email, additional pilot simulator training would be a "planet-killer for the MAX." In other internal emails, Mark Forkner, who was the Chief Technical Pilot and primary liaison to the FAA on pilot training for the MAX, responded to a question about whether the MAX's technical manual should give guidance to pilots on how to react to a particular alert. Forkner responded by saying "no" because it could trigger additional training requirements. Forkner recognized this was a "***bad excuse, but what I'm being pressured into complying with.***"

19. In 2012, wind tunnel and other tests revealed that the weight and location of the MAX's new engines caused the plane to aggressively "pitch up" in flight, i.e., point its nose upward. That, in turn, created aerodynamic instability and increased the risk the aircraft could stall. While the safest way to fix this was to make structural changes to the airplane, Boeing could not do that without risking its ability to proceed under the old 737 type certificate.

20. Instead, Boeing developed a "band-aid" solution – an automated system called the Maneuvering Characteristics Augmentation System ("MCAS"). MCAS is a software "fix" embedded in the flight control computer and was designed to automatically take over the plane and point the nose downward if a sensor detected an uncommanded pitch-up.

21. MCAS was recognized internally as an imperfect solution, but it was initially designed as a restricted system that would only operate in limited conditions and with redundant safety features. For example, the initial design of MCAS anticipated (i) the installation of an indicator light so pilots would know if the system was inoperable or defective, (ii) that MCAS would operate only under narrow conditions and trigger only if signaled to do so by both an "Angle of Attack" or "AoA" sensor ***and*** a g-force sensor, and (iii) that MCAS would have limited authority to control the pitch of the plane by no more than 0.6 degrees.

22. As discussed below in Section IV.B, these initial safety limitations (and others discussed below) were jettisoned in a series of later revisions to MCAS due to concerns that they would require additional pilot training or increase the cost of the plane. One of the most inexcusable changes to the MCAS design was to make it so it could be triggered by only a single AoA sensor, which is known in the industry as a "single point of failure." Former Boeing employees and multiple industry experts have stated they were ***"shocked"*** to learn that MCAS had a single point of failure, referring to the design decision as "nuts" and "flawed" because ***"a single point of failure is an absolute no-no."***

23. In order to gain FAA approval for MCAS, Boeing used a number of tactics to pressure, mislead, confuse, and outright deceive the FAA. For example, in a series of text messages written in November 2016 between Mark Forkner and another Boeing pilot, which were revealed only in October 2019, Forkner conceded, ***"so I basically lied to the regulators (unknowingly)***." Despite admitting later in the text-message chain that they would have to update the FAA, neither Boeing nor Forkner corrected this "lie." In multiple additional internal emails and texts, Forkner and other Boeing employees bragged about "Jedi-mind tricking" both regulators and customers of Boeing, including Lion Air, which was one of the airlines they "made feel stupid

about trying to require any additional [pilot] training requirements." Boasting about this, the employee wrote, "***I just jedi mind tricked [these] fools . . . I save this company a sick amount of $$$$.***"

24. Internal Boeing documents recently made public (but known to Boeing's senior management for more than a year) show that, inside Boeing, employees were candid in expressing their concerns about the MAX's safety. For example:

- A February 8, 2018 text-message exchange between Boeing employees: "***Would you put your family on a MAX simulator trained aircraft? I wouldn't***." The other employee responded, "No."
- A March 22, 2018 text-message exchange between Boeing employees: "Not sure if I will be returning in April given this – am not lying to the FAA. Will leave that to people who have no integrity."
- A May 15, 2018 text-message exchange between Boeing employees: "***I still haven't been forgiven by God for the covering up I did last year."***
- A May 18, 2018 text-message exchange between Boeing employees: "I have used the words 'misleading' and 'mischaracterization' a lot over the last two years in relation to this [MAX] program."
- A May 18, 2018 text-message exchange between Boeing employees: "It's such a shit show [] I'll be shocked if the FAA passes this turd . . . They are doing all this last minute shit."

25. The safety issues with the MAX were so egregious that none other than Captain Chesley "Sully" Sullenberger – an enormously experienced former United States Air Force veteran and retired commercial pilot – has gone on record stating that the Boeing 737 MAX was a ***"death trap***" due to a "***pernicious and deadly design***." In an October 13, 2019 letter to the editor of *The New York Times Magazine*, Sullenberger wrote that "[t]he MCAS design should never have been approved, not by Boeing, and not by the [FAA]."

26. Boeing has been thrown into turmoil as a result of the 737 MAX debacle. It had to halt production of its 737 MAX aircraft, its senior executives including Defendant Muilenburg

have been fired, the Securities Exchange Commission ("SEC") has launched a civil fraud investigation, and the Department of Justice ("DOJ") is conducting a criminal investigation. Shareholders lost billions of dollars because of Defendants' fraudulent conduct, and they bring this action to recover for their losses.

## II. JURISDICTION AND VENUE

27. The claims asserted in this Complaint arise under Sections 10(b) and 20(a) of the Exchange Act (15 U.S.C. §§ 78j(b) and 78t(a)), and SEC Rule 10b-5 promulgated thereunder (17 C.F.R. § 240.10b-5).

28. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1337, and Section 27 of the Exchange Act (15 U.S.C. § 78aa).

29. Venue is proper in this Judicial District under 28 U.S.C. § 1391(b), Section 27 of the Exchange Act, 15 U.S.C. § 78aa(c). Many of the acts alleged herein, including the preparation and dissemination of materially false and misleading statements, occurred in substantial part in this District. Additionally, Boeing's principal place of business is located in this District.

30. In connection with the acts alleged in this Complaint, Defendants, directly or indirectly, used the means and instrumentalities of interstate commerce, including but not limited to the mails, interstate telephone communications, and the facilities of a national securities exchange.

## III. PARTIES

### A. Lead Plaintiff

31. MissPERS is a pension fund established for the benefit of the current and retired public employees of the State of Mississippi. MissPERS is responsible for the retirement income of employees of the state, including current and retired employees of the state's public school districts, municipalities, counties, community colleges, state universities, libraries and water

districts. MissPERS provides benefits to over 75,000 retirees, manages over $33 billion in assets for its beneficiaries, and is responsible for providing retirement benefits to more than 250,000 current public employees. As set forth in the certification attached to this Complaint as Exhibit A, MissPERS purchased Boeing common stock during the Class Period and suffered damages as a result of the violations of the federal securities laws alleged herein.

**B. Named Plaintiffs**

32. Plaintiff the City of Warwick Retirement System ("Warwick") is a Rhode Island pension fund. As set forth in the certification attached to this Complaint as Exhibit B, Warwick purchased or otherwise acquired Boeing common stock during the Class Period and was damaged by Defendants' conduct as alleged in this Complaint.

33. Plaintiff William C. Houser ("Houser") is an individual investor. As set forth in the certification attached to this Complaint as Exhibit C, Houser purchased or otherwise acquired Boeing put and call options during the Class Period and was damaged by Defendants' conduct as alleged in this Complaint.

34. Plaintiff Bret E. Taggart ("Taggart") is an individual investor. As forth in the certification attached to this Complaint as Exhibit D, Taggart purchased or otherwise acquired Boeing call options during the Class Period and was damaged by Defendants' conduct as alleged in this Complaint.

35. Plaintiff Robert W. Kegley, Sr. ("Kegley") is Trustee of the Robert W. Kegley Sr. Revocable Living Trust U/A DTD 04/16/2003. As set forth in the certification attached to this Complaint as Exhibit E, Kegley purchased Boeing common stock during the Class Period and was damaged by Defendants' conduct as alleged in this Complaint.

### C. Defendants

36. Defendant The Boeing Company ("Boeing" or the "Company") is a Delaware corporation with its headquarters located in Chicago, Illinois. Boeing is the world's largest aerospace company and among the largest industrial exporters in the United States.

37. Defendant Dennis A. Muilenburg ("Muilenburg") served as Boeing's President from December 2013 to December 2019, Chief Executive Officer from July 2015 to December 2019, and Chairman of the Board from March 2016 to October 2019. On December 23, 2019, Boeing's Board of Directors terminated Defendant Muilenburg.

38. Defendant Gregory D. Smith ("Smith") is Boeing's Chief Financial Officer and Executive Vice President of Enterprise Performance & Strategy, having held this role since 2011. Prior to that, Defendant Smith served as Corporate Controller and Vice President of Finance at Boeing.

39. Muilenburg and Smith are collectively referred to herein as the "Executive Defendants." The Executive Defendants, because of their high-ranking positions and direct involvement in the everyday business of Boeing, directly participated in the management of Boeing's operations, including its public reporting functions, had the ability to, and did control, Boeing's conduct, and were privy to confidential information concerning Boeing and its business, operations, and financial statements, as alleged herein.

40. Boeing and the Executive Defendants together are sometimes collectively referred to herein as "Defendants."

## IV. FACTUAL BACKGROUND

### A. Boeing Rushed The 737 MAX To Market In Order To Compete With Airbus's New Fuel-Efficient A320neo

#### 1. Boeing's Background And Its Duopoly With Airbus

41. Boeing was founded in 1916 and expanded over the decades to become the dominant commercial aircraft manufacturer in the United States. The Company's narrow-body 737 model commercial jetliner, introduced in 1964, ultimately became the highest selling commercial aircraft in aviation history. By 2018, Boeing was an industrial powerhouse, reporting revenues of $101 billion and an operating profit of $12 billion, with its Commercial Airplanes division responsible for $7.9 billion of that profit.

42. In the years leading up to the Class Period, Boeing's main global competitor in the commercial aircraft industry was Airbus, a European-based manufacturer of commercial airliners. Boeing and Airbus each produced one of the most popular commercial passenger jets in the world: Airbus's narrow-body plane model A320 and Boeing's corresponding model 737. Over time, Airbus's market share grew and competition between the two manufacturers intensified as they became a *de facto* duopoly in the global aircraft manufacturing market. As of 2020, the two companies together accounted for more than 91% of worldwide commercial jetliner sales.

#### 2. Boeing And Airbus Competed To Develop The Next Generation Of Fuel-Efficient Commercial Jetliners

43. On December 1, 2010, Airbus announced plans for the A320neo – a revamped version of the A320 that would be 15%-20% more fuel efficient than the existing version of the plane. The A320neo was centered around a new engine design, which Airbus claimed would result in "lower operating costs and up to 500nm (950 km) more range or two tonnes more payload." Airbus committed up to $1.5 billion to develop the "new engine option," called "neo" for short.

44. Airbus's announcement ended what *The New York Times* had termed "a war of nerves [between Boeing and Airbus] over who would announce plans to update their short-range planes." Indeed, just days prior to Airbus's announcement, the Chief Executive of Boeing Commercial Airplanes, James Albaugh, had told *The New York Times* that Boeing was likely to hold off on an engine change for the 737 and instead develop an entirely new aircraft by 2020.

45. Boeing's immediate response to the Airbus announcement was to declare that Airbus's decision to upgrade the engines on the A320 (rather than develop a new model) was misguided. According to reports that emerged years later, on January 14, 2011, Boeing held an internal "Excellence" meeting where Albaugh criticized Airbus's decision to retrofit its A320s with fuel-efficient engines, stating, "***It's going to be a design change that will ripple through the airplane***. I think they will find it more challenging than they think it will be."

46. At the January 14, 2011 "Excellence" meeting, Albaugh confirmed to employees that, despite the introduction of the A320neo, Boeing would continue with its plans to develop an entirely new aircraft. Boeing's then-CEO, W. James McNerney, Jr., similarly told securities analysts that "our current bias is to move to a newer airplane, ***an all-new airplane***, at the end of the decade, beginning of next decade. It's our judgment that our customers will wait for us."

### 3. As Sales Of Airbus's A320neo Accelerated, Boeing Abandoned Its Plans To Design A New Aircraft And Decided To Upgrade The Engines On Its 737

47. It soon became clear that Boeing had misread the marketplace. By June 11, 2011, Airbus had booked more than 200 firm orders for the A320neo and had softer commitments for 200 additional purchases. On June 23, 2011, Airbus announced in a press release following the 2011 Paris Air Show that it had received $72.2 billion in orders, setting "a new record for any commercial aircraft manufacturer at any air show ever."

48. On July 20, 2011, American Airlines – a loyal Boeing customer for more than a decade – publicly announced that it had ordered 130 A320neo planes. This was American Airlines's first-ever order of commercial airliners from a manufacturer other than Boeing. In the following weeks, Southwest Airlines, one of Boeing's most significant customers and an airline that had exclusively flown Boeing 737s for decades, began a dialogue with Airbus regarding a potential switch to the A320neo. *Reuters* reported at the time that "Boeing is seen as likely to go all-out to keep Southwest, its biggest customer."

49. In response, Boeing abandoned its plans to design an entirely new plane and decided instead to upgrade the 737 with larger, more fuel-efficient engines. As subsequently reported in the *Washington Post,* in a series of meetings in the spring and summer of 2011, "Boeing's [B]oard discussed how the company should respond to the threat of a new, more fuel-efficient line of Airbus jets." In those meetings several directors worried that designing an entirely new plane would be too costly and take too much time to bring to market, and "the board talked about how it would be faster and cheaper to revamp an older version of a Boeing jet."

50. In August 2011, Boeing's Board of Directors authorized the launch of the 737 MAX – an upgraded 737 with new engines – as a fuel-efficient update to the 737 NG. The *Washington Post* later reported that, "[b]efore approving plans for a new jetliner called the 737 Max, Boeing's board of directors discussed how quickly and cheaply it could be built to compete with a rival – but the members didn't ask detailed questions about the airplane's safety, according to three people present for the meeting."

51. On August 30, 2011, Boeing officially announced the 737 MAX program. Boeing promised its customers that the 737 MAX would be produced on a far faster schedule than Boeing's previous plan to introduce an entirely new aircraft. On December 13, 2011, Boeing

announced that Southwest had placed the first order for the MAX, agreeing to buy 150 planes for $19 billion. This was the largest order in Boeing history.

#### 4. Boeing Sought Regulatory Approval Of The MAX Under The Old 737 Type Certificate And Pressured Employees To Speed The Plane To Market

52. By updating the old 737 NG design rather than building an entirely new aircraft, Boeing was attempting to speed its plane through the regulatory approval process by using a so-called "amended type certificate."[2] The FAA often grants amended type certificates to modifications of previously approved aircraft designs. Defendants knew that, if the FAA would certify the MAX through an amendment to its 55-year-old 737 type certificate, Boeing would be able to complete the MAX in six years instead of ten. Moreover, updating the 737 NG would be far cheaper than designing a new plane from scratch, which would allow Boeing to sell the MAX at a competitive price as it fought to keep business away from Airbus.

53. Boeing had an inordinate amount of control over the FAA's certification process. Through an FAA program called "Organization Designation Authorization" ("ODA") – a program Boeing aggressively lobbied to expand during the MAX's development – the FAA was allowed to delegate to aircraft manufacturers much of the work related to certifying compliance with minimum regulatory standards needed to deliver a plane to market. For instance, Boeing's ODA permitted it to manage and make findings related to type certification programs, issue airworthiness certificates and approvals, determine conformity, approve data for major repairs and alterations, and approve design changes to products. At a 2015 Congressional hearing, a Boeing executive bluntly described the ODA program as effectively having an "***arm of the F.A.A. within***

[2] A "type certificate" is a certification issued by regulators that confirms that an aircraft is manufactured according to an approved design, and that the design ensures compliance with airworthiness requirements.

***the Boeing Company***." At the time the MAX was certified, Boeing had 1,500 employees in its ODA program – compared to the FAA's fewer than 45 employees working on the MAX's certification. Pursuant to its ODA, the FAA initially delegated 40**%** of the 737 MAX certification projects to Boeing through its ODA. In order to further speed up the certification process, Boeing continuously pressed the FAA to delegate certification plans originally retained by the FAA. Ultimately, unbeknownst to investors, Boeing was permitted to certify ***96%*** of its own work on the MAX, including on critical safety issues.

54. Boeing's most senior executives were required by law to be directly involved in the submissions to the FAA as part of the certification process for the 737 MAX. On December 18, 2015, Boeing had entered into a settlement with the FAA to resolve thirteen pending FAA investigations, called "Enforcement Investigative Reports" or "EIRs," most of which involved "failures of corrective action" (the "FAA Settlement Agreement"). In addition to requiring Boeing to pay multimillion dollar fines, the FAA Settlement Agreement mandated the ***direct involvement*** of Boeing "executive-level" management in several key areas of regulatory compliance, including "safety management" and the completeness of submissions to the FAA.

### 5. Boeing Insisted That The 737 MAX Not Require Any New Flight Simulator Training

55. Throughout the ensuing design and production process, Boeing put enormous pressure on its employees to minimize MAX development time and keep costs down. Engineers, for instance, were pushed to submit designs and technical work at roughly double the normal pace. As reported in a June 22, 2019 *Seattle Times* article, "[a] variety of employees have described internal pressures to advance the MAX to completion, as Boeing hurried to catch up with the hot-selling A320 from rival Airbus." The article quoted Mark Rabin, a Boeing engineer who performed flight-testing work on the MAX, who said "there was always talk about how delays of

even one day can cost substantial amounts. Meanwhile, staff were expected to stay in line: "'It was all about loyalty,' Rabin said. 'I had a manager tell me, 'Don't rock the boat. You don't want to be upsetting executives.'"

56. In their rush to get the 737 MAX into production, Boeing senior management emphasized one mandate above virtually all others: the MAX should require no new simulator training for 737-trained pilots. This was one of the MAX's most important selling points because it allowed Boeing to trade on the 737's time-tested reputation for safety and reliability. Moreover, Boeing told airline customers they would save "millions of dollars" and substantial time on pilot training because (according to Boeing) the MAX was so similar to older 737s, pilots could learn all they needed to know to fly the MAX via an hour-long take-home iPad course.

57. Boeing marketed the 737 MAX to airlines as a "[n]o simulator required plane" from the very outset of the program, ***years*** before the FAA decided what kind of pilot training was required. Thus, rather than have the plane's design dictate the manner in which it was marketed, Boeing had to ensure that the plane's design and subsequent regulatory approval delivered on the Company's aggressive marketing campaign.


**Figure 1.** Boeing marketing materials *circa* 2017, titled "Operational Commonality." Available at http://www.boeing.com/commercial/737max/by-design#/featured.

58. There were also significant economic reasons for Boeing's insistence on not requiring any new flight simulator training. Boeing agreed to rebate its customers enormous sums of money if regulators ultimately determined that the 737 MAX required additional simulator training. For example, Boeing agreed to rebate Southwest Airlines $1 million per aircraft if additional simulator training were required. With Southwest ordering 280 planes, any such requirement would have cost Boeing ***$280 million from Southwest's order alone***.

59. Numerous former Boeing employees have reported that Boeing senior management – including Keith Leverkuhn, Vice President and General Manager of the MAX Program and Michael Teal, the 737 MAX Program Manager – pressured the MAX team to ensure that no new simulator training was required. Employees later interviewed by the *Seattle Times* stated that the

issue was a "significant point of attention" at upper management levels, including by Leverkuhn and Teal. According to a March 23, 2019 *New York Times* article, former Boeing employees, including Rick Ludtke, an engineer who spent 19 years at the Company and helped design the 737 MAX cockpit, described intense internal pressure to avoid any design changes that might cause the FAA to lean toward a simulator mandate.

60. Ludtke said, "This [737 MAX] program was a much more intense pressure cooker than I've ever been in. The company was trying to avoid costs and trying to contain the level of change. They wanted the minimum change to simplify the training differences, minimum change to reduce costs, and to get it done quickly." Ludtke stated that "***[a]ny designs we created could not drive any new training that required a simulator. That was a first***." Likewise, *The New York Times* reported in an April 8, 2019 article that Mike Renzelmann, an engineer who worked on the MAX's flight controls, said, "They wanted to A, save money and B, to minimize the certification and flight-test costs."

61. Internal Boeing documents – later revealed in a document dump to Congress – corroborate these reports and illustrate the pressure employees faced to ensure that no simulator training was required. In a July 2014 email chain, one Boeing employee pointed out that guidance should be given to pilots about how to respond to a certain alert. Mark Forkner, Boeing's 737 MAX Chief Technical Pilot and primary liaison to the FAA on pilot training for the MAX, responded that Boeing could not provide additional instructions because doing so might trigger additional training requirements. Forkner wrote in the email that omitting the instruction was "the box we're painted into with the Level B training requirements" (i.e., training not requiring simulator time). "***A bad excuse, but what I'm being pressured into complying with***." In a

November 2015 email, Forkner reiterated that "Failure to obtain Level B training **. . . *is a planet-killer for the MAX***."

62. These pressures continued for years and throughout the entire development of the 737 MAX. Indeed, as late as June 1, 2018, a Boeing employee wrote, "[E]veryone has it in their head [that] meeting schedule is most important because that's what Leadership pressures and messages. All the messages are about meeting schedule, not delivering quality."

**6. Boeing's Culture Of Profits Over Safety**

63. Consistent with those messages, other Boeing employees have reported that the Company suffered from a culture that placed profits over safety, leading employees to cut corners and ignore red flags in the design, certification, and approval of planes.

64. On April 23, 2019, *The New York Times* featured an interview on its podcast (called the "Daily") with a former Boeing quality manager who worked at the Company for nearly three decades and repeatedly raised concerns internally about unsafe conditions at the Charleston, South Carolina facility where he worked and the planes that facility produced.[3] As the podcast explained, the two 737 MAX crashes and the safety failures that caused them were part and parcel of a Company-wide focus on the bottom line before any other concerns, confirming what whistleblower John Barnett, former Boeing quality manager, said were systemic safety problems at Boeing. The reporters asked, "After two 737 Max jet crashes killed 346 people and a federal investigation left the company in crisis, we ask: Is something deeper going wrong at the once-revered manufacturer?"

[3] The *Daily* is hosted by career *New York Times* reporter Michael Barbaro, who interviews fellow *New York Times* reporters about a single major event each day. By September 2019, the *Daily* garnered more than 2 million downloads a day and was carried on over 150 public radio stations in the United States.

65. The *Daily* reporters stated that they "began looking into whether that frenzied pace, whether those pressures might have had an impact . . . on the factory floor and affect[ed] the people who are actually building Boeing planes."

66. In his interview, Barnett recounted production conditions at his Boeing facility that rendered the Company's planes unsafe. For example, Barnett said that he "discovered all this debris [in a plane] . . . debris everywhere," and "physically showed [my manager] the airplane. I took pictures, sent him pictures," but the manager responded by tasking another employee with inspecting the plane in question. After Barnett refused to sign off on the plane, he "was removed from it" and the plane "was delivered without being cleaned." The hosts reported that "[Barnett] sees [the] pressure for speed resulting in all of this sloppiness." Barnett further described situations where defective parts were first misplaced then used in planes to be sold. As Barnett told *The New York Times*, "[T]here is an incentive not to report your defect that you created, because it's going to be held against you."

67. A November 6, 2019 *BBC News* article likewise discussed Barnett's alarming concerns about Boeing's profits-driven corporate culture, which Barnett explained was "all about speed, cost-cutting and bean count [planes sold]," and the Company's managers "are not concerned about safety, just meeting schedule." *BBC News* further reported that, after the Ethiopian Airlines Crash, four other Boeing employees contacted an FAA hotline to report similar concerns. Moreover, *BBC News* reported that "another former engineer, Adam Dickson, who was involved with the development of the 737 MAX at Boeing's Renton factory," recounted "a drive to keep the aeroplanes moving through the factory. There were often pressures to keep production levels up. My team constantly fought the factory on processes and quality. And our senior managers were no help."

### B. Boeing Learned That The MAX Had An Inherent Aerodynamic Instability And Installed A Software "Fix" To Paper Over The Problem

#### 1. Boeing's Initial Tests Revealed That The MAX's New Engines Caused The Plane's Nose To Pitch Upward In Flight

68. From the earliest days of the MAX program, Boeing's senior executives knew that retrofitting its existing, half-century old 737 airframe with the bigger engines required to match the A320neo's fuel efficiency would fundamentally change the aerodynamic and operational performance of the aircraft. In 2012, tests conducted at Boeing's Seattle facility revealed that the new engines generated inherent aerodynamic instability in the aircraft – specifically, a propensity to abnormally pitch-up in flight, creating a risk that the plane would undergo a "stall," i.e., a loss of lift due to an excessive angle of attack, and crash.[4]

69. One reason the MAX's new engines caused this pitch-up problem is because they were significantly larger than the engines on other Boeing 737 models. The larger and hotter a jet engine is, the more efficient it becomes and the less fuel it requires to operate. Indeed, anyone who has traveled on commercial flights over the past couple of decades has probably observed the trend in the airline industry of engines getting larger and, consequently, hanging closer to the ground than they did before. The CFM International LEAP engines that Boeing installed on the MAX were enormous – and therefore incredibly fuel efficient.

70. They were so large, however, that they could not hang under the wing in the same position as previous 737 models. The engines simply did not have enough ground clearance in that position. The solution was to extend the engine upwards and place it well forward of the wing.

[4] "Angle of attack" is the angle between the aircraft and oncoming airflow. An aircraft's lift varies with changes in its angle of attack. Increasing the angle of attack increases the aircraft's lift, until the aircraft reaches a "critical angle of attack." When the aircraft exceeds this critical angle of attack, lift decreases and the aircraft stalls.

This changed the centerline of the engine's thrust, and when the pilots applied power to the engine, the MAX had a strong tendency to "pitch up."

71. While this problem exists to some degree in many types of aircraft, in the MAX the size and position of the engines made it far worse. Astonishingly, at high "angles of attack," when the nose of the plane was pointed towards the sky, the engines themselves began to work like a wing and provided additional lift, forcing the airplane into an even higher angle of attack. As one pilot described it, pitch changes with increasing angles of attack create "dynamic instability," and the only airplanes that exhibit that characteristic are fighter jets, which "***are also fitted with ejection seats.***"

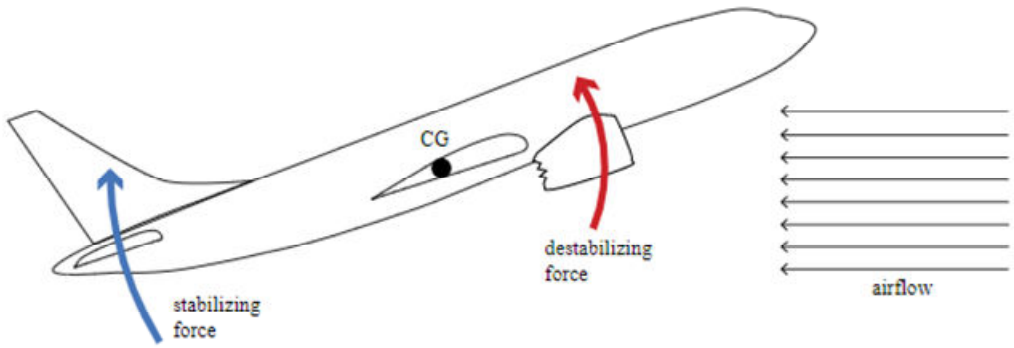



**Figure 2.** Relocation of the MAX's engines below the aircraft's center of gravity created pitch-up force that could exceed the counterbalancing force from the tail, causing instability. A nose-up attitude generates force that raises the nose still higher, creating the risk of a stall and crash.

72. Boeing's 2012 testing also revealed that the pitch-up tendency of the MAX created another problem: the force pilots felt in the control column as they executed certain high-speed maneuvers would not smoothly and continuously increase. Pilots who pull back forcefully on the column, or "stick," might suddenly feel a slackening of resistance. This condition violated FAA airworthiness regulations, which require that planes handle with smoothly changing stick forces.

Thus, unless Boeing found a way to address the MAX's pitch-up tendencies, the success of the MAX project would be in jeopardy.

73. The most reliable way to fix this problem would have been to make structural changes to the MAX's airframe, such as enlarging the tail surface to restore static stability. Structural changes, however, would have jeopardized Boeing's ability to include the MAX under the old 737-type amended certificate. The delays and increased costs associated with such a solution were unacceptable to Boeing senior management.

### 2. The MCAS Automated Flight Control System: Boeing's "Band-Aid" Solution To The Pitch Problem

74. Boeing developed a stop-gap solution: an automated system called the Maneuvering Characteristics Augmentation System, or "MCAS." MCAS is a software "fix" that Boeing embedded into the plane's flight control systems. MCAS was part of the design of one other Boeing plane that was under development (but not yet operational) in 2012, the KC-46 Pegasus – a highly specialized military aerial refueling tanker primarily flown by the United States Air Force.

75. On the KC-46 Pegasus, the MCAS design used two external sensors, called AoA sensors, to measure the plane's angle of attack. If the sensors showed that the nose of the plane had pitched up to a certain level without a corresponding command by the pilot, MCAS would automatically engage and rotate the plane's horizontal stabilizer upward.[5] This, in turn, would pitch the plane's nose down in order to avoid a stall. The MCAS operated automatically without pilot input and was given full authority to lower the MAX's nose.

[5] The "horizontal stabilizer" is a fixed-wing element in the aircraft's tail that prevents up-and-down, or pitching, motion of the aircraft nose.

76. The MCAS on the MAX was originally designed to operate in similar fashion to the KC-46. Given MCAS's importance to the MAX's operational performance, and the fact that it could in certain instances override pilot control, Boeing included a number of significant safety features, redundancies, and fail-safes in its initial designs of the system. For example:

- **Indicator Light.** Boeing's November 8, 2012 MCAS Preliminary Design Decision Memo included an indicator light for failure of the MCAS flight control system that would appear in the pilot's flight control panel.

- **Limited Operating Conditions.** MCAS was initially supposed to operate under narrow conditions, triggering only when distinct and independent sensors indicated that the plane had exceeded separate AoA and g-force thresholds and was near stall. The g-force thresholds were included because MCAS was designed to operate only at high speeds.

- **Limited Ability**. MCAS was initially designed to trim the plane's horizontal stabilizer by no more than 0.6 degrees – a limit embedded in Boeing's safety review submitted to the FAA. Similarly, in a presentation made for foreign safety regulators, Boeing described MCAS as providing "a nose down command to oppose the pitch up. Command is limited to 0.6 degrees from trimmed position."

77. In short, MCAS was recognized as a less-than-perfect solution to the MAX's pitch-up problem, but it was initially designed to be a restricted system that had redundant safety features and would operate only in limited circumstances.

### C. Boeing Knowingly Or Recklessly Ignored Multiple Safety Failings With The MCAS Design

78. In pursuit of Boeing's ultimate goal to get the MAX to market without requiring additional pilot training, Boeing quickly disregarded these planned safeguards for the MCAS. Boeing fundamentally altered the design of the MCAS, undermined the ultimate safety of the model, and ignored substantial evidence showing that, as a result, the MCAS operated in an unsafe manner. Specifically, as discussed further below, Boeing intentionally, among other things:

- Discarded the two-sensor trigger requirement, instead relying on a single AOA sensor to trigger MCAS, with no failsafe, in defiance of industry norms, regulations, Boeing's own historical practices, and the internal warnings of Boeing personnel;

- Ignored the fact that, as it learned in August 2017, the "AoA Disagree Light" – which indicates if the AoA sensors are malfunctioning – was non-operable on most 737 MAX airplanes;

- Secretly expanded the MCAS's operating conditions to allow it to seize control over the plane in both low- and high-speed environments;

- Secretly expanded the MCAS's authority to move the plane's tail by ***more than 300%***;

- "Jedi-Mind Tricked" regulators into deleting references to the MCAS in the flight operating manuals; and

- Removed an indicator light for MCAS failure from the plane's original design to avoid any further pilot training requirements.

79. The significant design changes and novel, untested features Boeing implemented in the MAX, including the MCAS, fundamentally belied Defendants' repeated assertions that the MAX had "operational commonality" with other 737 models. Indeed, at an October 30, 2019 hearing, Congressman Rob Woodall summarized an FAA official's warnings in a post-Class Period Department of Transportation Inspector General report, that "the 737 MAX is not a simple derivative of its previous models. It is a very complex modification and incorporat[es] many new and novel features."

80. Captain "Sully" Sullenberger characterized the final version of MCAS, which incorporated the changes described above, as a "***death trap***." In an October 13, 2019 letter to the editor of *The New York Times Magazine*, Sullenberger said that he is "one of the few who have flown a Boeing 737 MAX Level D full motion simulator" and that "***[t]he MCAS design should never have been approved, not by Boeing, and not by the [FAA]***."

### 1. MCAS's Use Of A Single Point Of Failure Was Contrary To Boeing's Own Standards And Industry Practice

81. As noted above, MCAS could be activated by data from a single AoA sensor. An AoA sensor is essentially the mechanical equivalent of sticking your hand out a car door window and rotating it in the wind. Any commercial airline traveler may have noticed the AoA sensors

when boarding a plane. There are usually two of them on either side of the plane and just below the pilot's windows. They look like wind vanes because that is exactly what they are – wind vanes that rotate in response to changes in the angle of attack.

82. Although there were two available AoA sensors on the 737 MAX, Boeing designed the final version of MCAS to draw data from only one sensor. As discussed below, this "single point of failure" was highly dangerous and contrary to industry practice. It meant that a single malfunctioning sensor could erroneously trigger MCAS, cause the system to pitch the MAX's nose downward, and force the aircraft into a dive.

83. Boeing engineers have confirmed that the Company allowed MCAS to rely on a single AoA sensor because using two sensors would have required the installation of additional alerts and potentially required flight simulator training. A March 26, 2019 *Seattle Times* article citing Boeing engineer Rick Ludtke stated

> that if the group had built the MCAS in a way that would depend on two sensors, and would shut the system off if one fails, he thinks the company would have needed to install an alert in the cockpit to make the pilots aware that the safety system was off. And if that happens, Ludtke said, the pilots would potentially need training on the new alert and the underlying system. That could mean simulator time, ***which was off the table***.

84. The sole AoA sensor used by MCAS was located in the vulnerable nose of the aircraft, where it was exposed to damage from jetbridges, ground equipment, and birds. Moreover, as Boeing knew, AoA sensors had a history of failure and malfunction. Between 2004 and the start of the Class Period, more than 200 events involving AoA sensor damage or malfunction had been reported to the FAA. For this reason, Airbus, which considers AoA sensors to be "safety critical," installed three sensors on the A320neo.

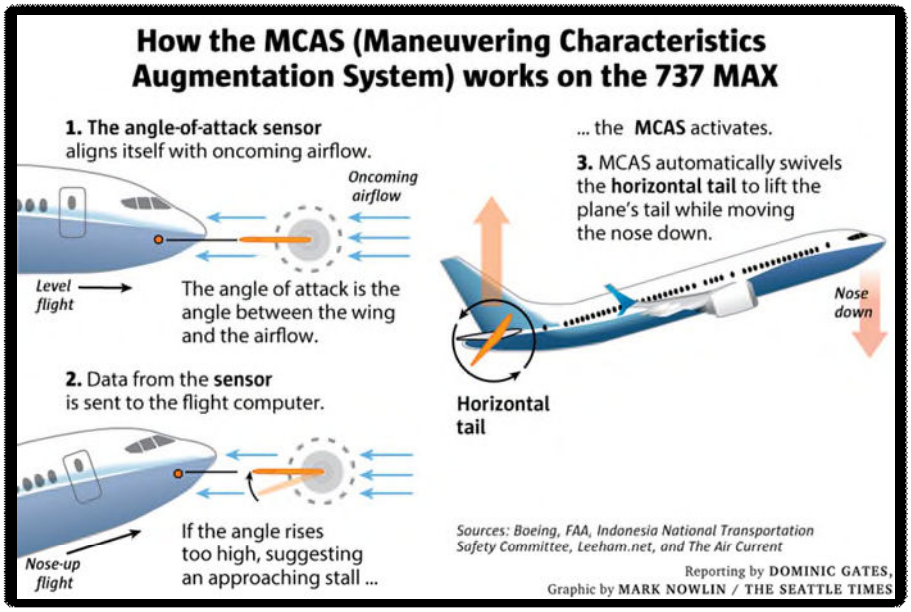



**Figure 3.** MCAS collected angle of attack data from just one of two available AoA sensors. If that single sensor indicated the plane's AoA was too high, MCAS would activate and rotate the MAX's horizontal stabilizer to force the plane's nose down.

### a. A Single Point Of Failure Violated Boeing's Policies, Its Historical Practice, And Industry Standards

85. Boeing's failure to build redundancies into MCAS violated Boeing's own design policies. As stated in the report of the Joint Authorities Technical Review Board ("JATR") dated October 11, 2019, (the "Joint Report"), "[t]he use of pilot action as a primary mitigation means for MCAS hazards, before considering eliminating such hazards or providing design features or warnings to mitigate them, is not in accordance with Boeing's process instructions for safe design in the conception of MCAS for the B737 MAX."[6]

86. Indeed, as noted above, Boeing had previously implemented a version of MCAS on a military aerial refueling tanker it had developed years earlier called the KC-46 Pegasus. While

[6] The Joint Report was prepared for the FAA by a team compromising of technical representatives from the FAA, National Aeronautics and Space Administration (NASA), and civil aviation authorities from Australia, Brazil, Canada, China, Europe, Indonesia, Japan, Singapore, and the United Arab Emirates.

Boeing used the tanker to present MCAS as an existing technology to the FAA (and therefore not requiring close agency involvement in testing and certification), the version of MCAS installed on the KC-46 had redundancies and safety features inexplicably absent from the MAX. In particular, the MCAS installed on the KC-46 relies on ***both*** available AoA sensors and compares readings from each. In addition, pilots can override the MCAS installed on KC-46 simply by pulling on the controls the same as with all non-MAX Boeing aircrafts; on the MAX, by contrast, MCAS remains active even if pilots pull on the controls and will repeatedly activate over and over again, pushing the plane's nose down with each activation.

87. Industry experts have likewise concluded that MCAS's reliance on only one of two available sensors ran contrary to standard industry practice. Aeronautical engineer Bjorn Fehrm told *The New York Times* in a March 29, 2019 article that this vulnerability was "not a good engineering system. . . . That's where they screwed up royally." A March 27, 2019 *Wall Street Journal* article reported: "Safety experts, pilots and some former Boeing engineers say ***it is rare for aircraft to rely on just one sensor for almost any system whose failure could cause a crash***."

88. As reported in the *Seattle Times* on March 27, 2019, "Peter Seiler, a professor at the University of Minnesota who previously worked on the flight-control electronics for the Boeing 787 aircraft, said it would be highly unusual to have a safety-critical system dependent on a single sensor. 'It's a huge part of the design. It's a huge part of the certification process,' Seiler said." As Boeing's Vice President of Product Development Mike Sinnett admitted at a November 27, 2018 meeting with American Airlines pilots, MCAS was indeed "flight-critical software."

89. Boeing's own personnel were "shocked" to learn that the system was susceptible to a single point of failure and acknowledged that this design violated core safety principles. A June 1, 2019 *New York Times* article reported that numerous current and former Boeing employees

"said that after the first crash, they were stunned to discover MCAS relied on a single sensor. '***That's nuts***,' said an engineer who helped design MCAS. '***I'm shocked***,' said a safety analyst who scrutinized it."

90. A March 26, 2019 *Seattle Times* article similarly reported that "some of the people who have worked on Boeing's new 737 MAX airplane were baffled to learn that the company had designed an automated safety system that abandoned the principles of component redundancy, ultimately entrusting the automated decision-making to just one sensor." The article quoted a "former Boeing engineer who worked on the MAX," who said, "'***A single point of failure is an absolute no-no***. . . . That is just a huge system engineering oversight.'"

**b. Boeing's Employees Warned Of The Dangers Of A Single Point Of Failure**

91. As early as 2014, senior Boeing engineers were concerned about the possibility that erroneous AoA data might compromise the plane's safety unless appropriate redundancies were introduced. In 2014, Boeing's Chief Test Pilot, Ray Craig, along with senior Boeing engineer Curtis Ewbank, urged implementation of a backup system that would introduce redundancies, called "synthetic airspeed." This backup system could detect when the AoA sensors, were malfunctioning and prevent other systems, including MCAS, from relying on that faulty information.

92. According to an ethics complaint Ewbank filed with Boeing, however, the Company decided not to pursue the proposed safety redundancy because of its potential cost and fears that it would trigger training requirements for pilots. Ewbank's complaint stated that Boeing senior executives twice rejected adding a new safety system on the basis of "cost and potential (pilot) training impact." When Ewbank's group raised these safety features a third time in a

meeting with the 737 MAX Program Manager, Michael Teal, Teal cited the same objections as he killed the proposal.

93. A February 26, 2013 internal Boeing email (made public in January 2020) confirms Ewbank's allegations and shows that a proposal to include synthetic airspeed was rejected because "***it would likely jeopardize the Program directive to maintain Level B [i.e., non-simulator-based] training for our customers***."

94. Again in 2015, Boeing engineers expressed concern that MCAS's reliance on a single AoA sensor created safety risks. On December 17, 2015, a Boeing engineer wrote an email asking, "Are we vulnerable to single AOA sensor failures with the MCAS implementation or is there some checking that occurs?" Once again, Boeing ignored these concerns.

**c. Boeing Submitted A Specious "Functional Hazard Analysis" To Regulators In An Effort To Justify Its Use Of A Single Point Of Failure**

95. The FAA required Boeing to perform a "hazard assessment" to gauge the risk posed by an MCAS failure. Pursuant to the regulatory framework governing hazard assessments, including 14 C.F.R. § 25.1309 and AC 25.1309-1, the more severe a hazard resulting from system or equipment failure, the less likely it must be to occur. The severity of a failure is graded on a scale of increasing severity from "minor," "major," "hazardous," to "catastrophic."

96. The FAA defines the applicable failure conditions as follows:

- **Minor Failure Condition.** A "minor" failure "would not significantly reduce airplane safety, and [would] involve crew actions that are well within their capabilities," such as a change in flight plan. The FAA requires that the probability of a minor failure occurring can be "Probable," or anything more likely than one in one hundred thousand (i.e., $10^{-5}$).
- **Major Failure Condition.** A "major" failure is one that "would reduce the capability of the airplane or the ability of the crew to cope with adverse operating conditions." A major failure could result in discomfort to passengers and crew and possibly injuries, though it is not expected to cause fatalities. The FAA requires that the probability of a major failure occurring must be "Remote," or less likely than one in one hundred thousand (i.e., $10^{-5}$).

- **Hazardous Failure Condition.** A "hazardous" failure creates "physical distress or higher workload such that the flightcrew cannot be relied upon to perform their tasks accurately." A hazardous failure could be expected to cause "serious or fatal injury to a relatively small number of the occupants." The FAA requires that the probability of a hazardous failure occurring must be "Extremely Remote," or less likely than one in 10 million (i.e., $10^{-7}$).

- **Catastrophic Failure Condition.** A "catastrophic" failure is one that is expected to result in multiple fatalities, and usually with the loss of the entire airplane. The FAA requires that the probability of a catastrophic failure occurring to be "Extremely Improbable," or less likely than one in a billion (i.e., $10^{-9}$). An Extremely Improbable failure condition is considered so unlikely to occur that it is not expected to happen during ***the entire operational life of all airplanes of a single design.***

97. The FAA requires any aircraft receiving an assessment of "hazardous" or "catastrophic" failure condition to have multiple redundancies on its safety systems. With respect to the MAX, such a finding would prohibit the use of a single point of failure such as just one AoA sensor, and would result in additional pilot training being necessary. (Though for the reasons discussed above, industry standards prohibited MCAS's reliance on a single AoA sensor, irrespective of the outcome of any AC 25.1309-1 hazard assessment.) With its focus on saving money and eliminating any additional training requirements, Boeing manipulated the assumptions underlying the hazard analysis in order to obtain a "minor" or "major" rating for MCAS.

#### i. Boeing Used Multiple False Assumptions To Conduct Its Functional Hazard Analysis

98. The Functional Hazard Analysis that Boeing submitted to the FAA classified a potential failure of MCAS as a "major failure," for which a single sensor trigger was acceptable. This classification was false. According to independent consultant Peter Lemme, a former Boeing flight-controls engineer, "The combination of air data, stall warning and MCAS persistent malfunction should have been declared CATASTROPHIC," receiving the most severe hazard categorization. Similarly, the Joint Report concluded that Boeing followed an approach and employed assumptions that were "not [] standard [in the] industry" to determine that an MCAS malfunction was classified no higher than a "major failure."

99. As an initial matter, Boeing assumed that if MCAS activated erroneously, pilots would recognize it and correct it in less than ***four seconds***. Boeing made this assumption even though the Company never mentioned MCAS in the flight manual, did not train pilots on how to respond to it, and never even told pilots it existed.

100. Boeing's June 11, 2018 MCAS "Coordination Sheet" described a typical reaction time "***with pilot training***" to be approximately four seconds. As the Coordination Sheet stated, even this was a "hazardous" condition when the plane was flying in certain conditions, particularly at higher speeds and g-forces.

101. Moreover, Boeing knew that if a pilot reacted with just a six-second delay from optimal response time and failed to override the MCAS within 10 seconds, "***the failure [would] be catastrophic due to the inability to arrest the airplane overspeed***." In other words, the plane would be cast into a fatal dive that would likely result in a crash and multiple fatalities.

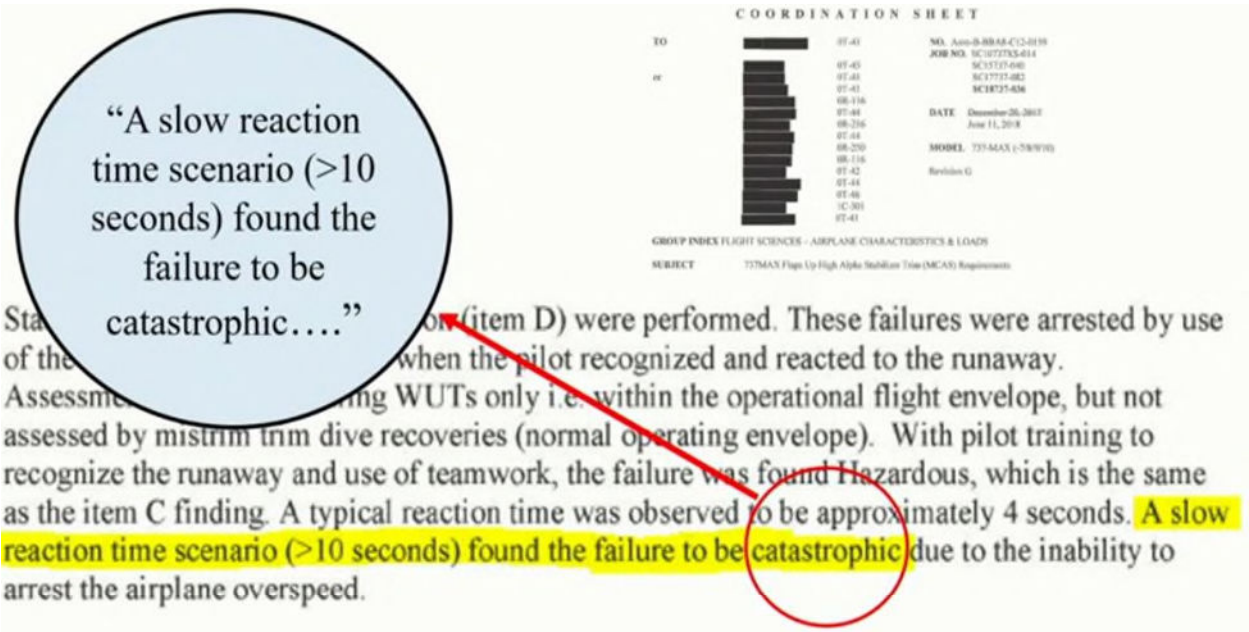



**Figure 4.** Boeing's June 8, 2011 MCAS "Coordination Sheet" showed that an erroneous MCAS activation would be "catastrophic" if pilots took more than 10 seconds to counteract it.

102. Boeing's four-second estimate relied on a series of "assumptions" that were entirely unmoored from the reality of the MCAS design. Boeing purported to assume that pilots in the 737 MAX planes would react as quickly to an erroneous MCAS activation as they did in older 737 planes in response to erroneous activations of those planes' – much more limited and widely known – automatic trim control systems. Boeing knew or should have known that was not a reasonable assumption. On the older planes – indeed, on every Boeing airplane ever manufactured other than the MAX – a pilot could disable any automatic flight system simply by pulling back on the plane's column.

103. The MAX did not work this way. Instead, to resume control of the MAX, the pilot had to execute a series of complicated steps that were not disclosed in the flight manual. Under certain circumstances, even if the pilot followed all these steps he or she would still not be able to resume manual control of the plane.

104. Boeing's Functional Hazard Analysis first assumed that the pilot would locate and activate two stabilizer "cutout" or "kill" switches to shut off automated trim control and engage the plane's trim control (i.e., a wheel that manually controls the plane's horizontal stabilizer).

105. The pilot would have to understand that the two cut-off switches operated differently than the cut-off switches on earlier 737 models. On previous aircraft, one switch would deactivate the electronic control over the horizontal stabilizer; the other disabled automated control over the stabilizer in the tail. This allowed pilots to flip one cut-off switch to cease automated systems and resume manual control, but still have the assistance of an electric motor to physically move the stabilizer. On the MAX, by contrast, both switches cut off ***all*** electric power to the stabilizer, both from the yoke buttons and from any automated systems such as the MCAS.

106. With all electric power to the stabilizer cut, pilots would have to use the mechanical trim wheel in the center console. In many situations, it was simply impossible for pilots to overcome the aerodynamic forces working on the airplane to physically hand crank the trim wheel. At the high speeds that could be induced by an MCAS activation sending the plane into a dive, an enormous amount of force was needed to manually pull up the nose of the aircraft. In these circumstances, it could become physically impossible to turn the trim wheel. As discussed in more detail below, this is precisely what happened in the Ethiopian Airlines Crash.[7]


**Figure 5.** Boeing's hazard assessment assumed that, in response to an MCAS malfunction, pilots would perform multiple tasks, like those above, never previously required in any other Boeing plane, in under three seconds.

107. As former Boeing engineer Lemme explained in a March 29, 2019 *Reuters* article, "In the scenario where the stabilizer is running away nose down, the pilot may only fixate on

[7]A video prepared by a current pilot illustrating this issue may be found at https://www.youtube.com/watch?v=aoNOVlxJmow.

pulling the column back in response[.] They may not be mentally capable to trim back or cutout the trim – instead they just keep pulling."

108. Boeing's analysis also ignored the impact that the cacophony of flight deck alerts – including airspeed, altitude, and "stick shaker" failure alerts, and a computerized voice repeating "Don't sink! Don't sink!" – would have on pilots' ability to react to the malfunction of a system they did not even know existed. As the *Wall Street Journal* reported in a March 27, 2019 article, "[n]umerous pilots and safety experts . . . said that in practice, amid the chaos of an aircraft lurching into a steep dive with emergency warnings blaring, it is unrealistic to expect pilots to recognize what is happening and respond almost instantaneously."

109. The Joint Report pointed out that Boeing's analysis was completely detached from the real cockpit conditions created by both Boeing's design and its failure to fully inform pilots about MCAS:

> When all flight deck effects are considered, the introduction of the MCAS function invalidated aircraft-level assumptions for flight crew responses related to erroneous AOA failures under certain conditions. A complete workload assessment was not performed for validation of the erroneous AOA effects with the added MCAS functionality. The same assumptions for flight crew responses to erroneous AOA were carried over from previous programs without formal validation.

110. The failure to perform such an analysis ran contrary to the regulatory requirements of 14 CFR § 25.1302, which calls for an applicant to show that aircraft systems are "designed so that qualified flightcrew members trained in their use can safely perform all of the tasks associated with the systems' and equipment's intended functions." In other words, Boeing was required to demonstrate that pilots could counter an erroneous MCAS activation under the cockpit conditions that would actually exist in real life. The Joint Report further states that while "MCAS was not assessed" for compliance with Section 25.1302, Boeing's MAX type certificate data sheet falsely indicates that Section 25.1302 was "applied to the entire aircraft."

111. The NTSB report concluded "that the assumptions that Boeing used in its functional hazard assessment of uncommanded MCAS function for the 737 MAX ***did not adequately consider and account for the impact that multiple flight deck alerts and indications could have on pilots' responses to the hazard***."

112. Finally, Boeing's analysis ignored the fact that even if the manual/electric trim command stopped a single MCAS misfire, a faulty AoA sensor would cause MCAS to "wake up" again five seconds later ***and start the process all over again***. Boeing knew that the MCAS would fire repeatedly, trimming the plane on ***each*** erroneous activation. Nevertheless, Boeing's hazard analysis assumed MCAS would misfire only once, achieving a maximum trim of 0.6 degrees in all cases. The Joint Report summarizes Boeing's unwarranted assumptions: "Boeing concluded that multiple erroneous MCAS activations were not worse than a single erroneous activation, based on the assumption that the crew would return the aircraft to a trimmed state . . . ***following each activation***."

**ii. Even With False Assumptions, MCAS Failed The Functional Hazard Analysis, So Boeing Concocted An Impermissible "Risk Discount"**

113. Astonishingly, even applying Boeing's absurd and impermissible assumptions, Boeing's hazard assessment ***was still forced to conclude that an MCAS malfunction was a "hazardous failure"*** under certain conditions. Specifically, Boeing calculated that on a normal flight, if MCAS erroneously activated, it would be corrected quickly and the associated risk was classified as a "major failure." However, during more strenuous flight operations – such as a "windup turn" – an erroneous activation of the MCAS was deemed a "hazardous failure," which under FAA regulations would require at least two redundant sensors.

114. To avoid this result, Boeing concocted a wholly unwarranted method to downgrade its hazard calculation. Boeing determined that the chance the MAX would leave the normal flight

envelope and enter the operational flight envelope (more strenuous flight operations) was one in a thousand (i.e., $10^{-3}$). Boeing then used this as a ***discount rate*** to discount the MCAS failure rates that would occur in the operational flight envelope. With this logical leap, Boeing downgraded the MCAS malfunction rate in the operational flight envelope from $10^{-7}$ to $10^{-4}$.

115. The Joint Report pointed out that this sleight of hand had ***no basis*** in applicable regulations and contravened standard industry practice. "A probability of 1E-3 for the aircraft in the operational flight envelope (OFE) was used in combination with the probability of the system failure to achieve the 1E-7 minimum probability required for the 'hazardous' MCAS failure condition. Use of AC 25-7C [i.e., the probability the aircraft is in the operational flight envelope] ***is not a standard industry approach for § 25.1309 compliance***."

### 2. In November 2016, The MAX's Chief Test Pilot Identified That MCAS Was "Running Rampant" And That The Situation Was "Egregious"

116. On November 16, 2016, the 737 MAX's Chief Technical Pilot, Mark Forkner, sent text messages to then-program Technical Pilot, Patrik Gustavsson, identifying the same hazardous conditions caused by MCAS that were responsible for both fatal crashes. In the text messages, Forkner told Gustavsson that, contrary to his previous statements to the FAA, MCAS was active at low speed and low Mach conditions ("M.2") well within the normal flight envelope. He stated that the system was "***running rampant***" and causing the plane to "trim[] itself like crazy." Forkner characterized MCAS's erratic and unsafe performance as "***egregious***":

> Oh shocker alerT! MCAS is now active down to M .2. ***It's running rampant in the sim on me***. . . . I'm levelling off at like 4000 ft 230 knots and ***the plane is trimming itself like crazy. I'm like WHAT?*** . . . . Granted, I suck at flying, but even this was ***egregious***.

117. Gustavsson replied that he had observed the MAX exhibit the same "egregious" behavior, "but on approach."

118. As part of the text-message exchange, Forkner also acknowledged that because MCAS was active at low speeds, his prior statements to the FAA that the system "only operates WAY outside of the normal operating envelope" were false. Forkner admitted, "***so I basically lied to the regulators (unknowingly)***." Gustavsson replied that Boeing would have to update the description of the system provided to the FAA: "Oh great, ***that means we have to update the speed trim description in vol 2***."

119. Boeing, however, never updated the MAX's key safety documents and wholly failed to inform FAA personnel of the significant changes made to MCAS or their dangerous impact on the aircraft's operation. Instead, the internal culture at Boeing prioritized speed and profits over safety yet again. Former Boeing engineer Ludtke, who designed the MAX cockpit, told *The New York Times* in a June 1, 2019 article, "The pressure on us . . . was huge. And that all got funneled through Mark [Forkner]. . . . And the pushback and resistance from the F.A.A. got funneled through Mark." A June 22, 2019 *Seattle Times* article further reported that Forkner was "frequently anxious about the deadlines . . . going to some of his peers in the piloting world for help." In fact, as the *Wall Street Journal* reported in an October 23, 2019 article, "According to a fellow pilot who worked closely with Mr. Forkner at Boeing, ***Mr. Forkner repeatedly indicated to this ex-colleague that he feared losing his job if the FAA rejected Boeing's arguments to minimize training***."

120. The Joint Report makes clear that the pressure Forkner faced was no anomaly, but a function of Boeing's widespread "cultural" issues. The report found "signs of undue pressure on" Boeing employees "performing [FAA-] delegated functions, which may be attributed to conflicting priorities and ***an environment that does not support FAA requirements***."

121. Boeing continued to press the FAA to remove all references to MCAS from the MAX's pilot training. In a mid-January 2017 email, written just two months after observing MCAS's "egregious" behavior, Forkner himself asked the FAA to approve two changes to the "difference training" that pilots were to undergo in order to move from flying the prior 737 model to the MAX. The first was to delete a reference to MCAS. Forkner reminded the FAA official with whom he was corresponding, "[W]e decided we weren't going to cover it" in the flight manual and training course.

122. Ultimately, Boeing misled the FAA into approving just one hour of pilot training through an iPad about the differences between the MAX and the previous 737 generation. MCAS was not mentioned.

### 3. In August 2017, Boeing Learned That A Critical Safety Alert Warning Of Faulty AoA Sensors Was Not Operational On Most Of The MAX Fleet

123. According to the aircraft design approved by the FAA, when one of the MAX's two AoA sensors malfunctioned and registered a significant disagreement with the other, the message "**AOA DISAGREE**" was supposed to appear on the plane's primary flight display. Because a single faulty AoA sensor could, and ultimately did, erroneously trigger MCAS, the Disagree Alert was a critical safety feature. As aeronautical engineer Bjorn Fehrm explained, AoA Disagree Alerts are "critical, and cost almost nothing for the airlines to install."

124. Boeing represented in the MAX's certification documents that the AoA Disagree Alert was to be a ***standard, non-optional*** feature on the aircraft. Indeed, the AoA Disagree Alert had been a standard feature on prior 737 models.

125. As then-Acting Administrator of the FAA, Daniel Elwell stated in a July 11, 2019 letter to the House Committee on Transportation and Infrastructure, the AoA Disagree Alert was

part of the approved MAX design, and FAA regulations required the AoA Disagree Alert to be installed on every delivered airplane.

126. Boeing knew no later than August 2017 that the AoA Disagree Alert was not operational on the MAX unless optional "AoA indicator" software was purchased and installed on the aircraft's flight computers. As Boeing ultimately admitted:

> The disagree alert was intended to be a standard, stand-alone feature on MAX airplanes. However, ***the disagree alert was not operable on all airplanes*** because the feature was not activated as intended.

127. To avoid compromising its ambitious production schedule and disrupting delivery of its lucrative plane to customers, Boeing decided it would wait until 2020 to introduce new software to fix this dangerous defect. Astonishingly, Boeing failed to inform the FAA that the aircraft did not conform to the approved design. As a result, at the time of the Lion Air Crash, the AoA Disagree Alert was ***inoperable on 80% of the MAX airplanes Boeing delivered to customers***, despite the fact that Boeing's design requirements and FAA regulations required the warning to be operable on all delivered planes.

128. To make matters even worse, Boeing falsely told pilots in flight manuals and other documentation that like prior 737 models the AoA Disagree Alert ***was*** operable on all MAX aircraft. Southwest Airlines partially confirmed this in an April 29, 2019 statement:

> Upon delivery (prior to the Lion Air event), ***the AOA Disagree lights were depicted to us by Boeing as operable on all MAX aircraft, regardless of the selection of optional AOA Indicators on the Primary Flight Display (PFD)***. The manual documentation presented by Boeing at Southwest's MAX entry into service indicated the AOA Disagree Light functioned on the aircraft, similar to the Lights on our NG series. After the Lion Air event, Boeing notified us that the AOA Disagree Lights were inoperable without the optional AOA Indicators on the MAX aircraft.

129. At an October 30, 2019 Congressional hearing, Chairman Peter DeFazio called Boeing's decision to not only delay fixing the inoperable AoA Disagree Alert, but to conceal the inoperable alert from regulators and customers, ***"inexplicable":***

> Boeing learned that the AOA, angle of attack, disagree light, which was a standard feature on all Boeing 737s, did not work on this plane unless someone bought the upgraded package . . . they didn't tell the FAA, they didn't tell the customers, and they didn't tell the pilots about this until [the] Lion Air crash. That's inexplicable.

130. Chairman DeFazio further pointed out that in issuing a flight manual that falsely described the inoperable AoA Disagree Alert as operable yet nowhere mentioned the exceedingly significant, and highly operable, new MCAS feature, Boeing had utterly failed to meet its obligation to provide pilots with adequate information to safely operate the MAX. DeFazio stated, "And [the AoA Disagree Alert] was included in the flight manual, unlike MCAS. Wow. So you include something in the manual that doesn't work, but something that is going to work and potentially cause catastrophic issues is not in the manual."

131. Captain Dennis Tajer, a spokesperson for the Allied Pilots Association, was quoted in a May 5, 2019 article in the *Seattle Times* that "[h]aving any equipment detailed in the manual that doesn't actually exist . . . ***has no place in aviation. There's no fiction in flight, just the facts . . . . Literally, lives count on that***."

132. In both the Lion Air and Ethiopian Airlines aircraft, a single malfunctioning AoA sensor caused an erroneous activation of MCAS, forcing the plane into a dive. While pilots in both crashes didn't know it, the AoA sensors of those planes were already recording substantial disagreements even before takeoff. Because MCAS does not operate until pilots retract the flaps used on takeoff, had that AoA Disagree Alert been working, the pilots of the Lion Air and Ethiopian Airlines flights might have never taken off. At a minimum, the pilots would have been

alerted to the malfunctioning AoA sensors and could have addressed those problems prior to takeoff.

133. Once the pilots retracted the flaps at an altitude of 5,000 feet, however, the MCAS interpreted the erroneous angle-of-attack information and automatically pushed the jet's nose sharply down. Even at that point, the AoA Disagree Alert could have alerted the pilots that the planes' AoA sensors were malfunctioning and could have helped diagnose the erroneous MCAS activation more quickly.

134. Indeed, at a November 27, 2018 meeting with American Airlines pilots, Boeing's Vice President of Product Development, Mike Sinnett, acknowledged that a functioning AoA Disagree Alert ***would have prevented the Lion Air Crash***. A March 27, 2019 *Wall Street Journal* article reported that, according to Dan Carey, American Airlines union president, who attended the meeting, Sinnett told the pilots, "'This [the Lion Air Crash] wouldn't have happened to you guys,'" because American Airlines had operable AoA Disagree Alerts on their aircraft. The *Wall Street Journal* went on to note that American Airlines's cockpit indicators "would have directed pilots to have the potential problem checked out on the ground" because an AoA Disagree Alert is so serious that it is a "no-go item," i.e., a plane will not take off if the alert is active.

#### 4. Boeing Made Deadly Changes To The MAX Before The Plane Was Certified And Without Informing The FAA

135. In the course of the design process, Boeing concealed major changes to MCAS that rendered the version of MCAS delivered to customers materially different, far more powerful, and even more dangerous than the version presented to the FAA and other regulators at the time the plane was approved.

136. In late January 2016, Boeing began its first test flights of the MAX. Within just a few weeks, test pilots encountered a serious problem: the MAX wasn't handling well when nearing

stalls at low speeds. Pilots discovered the same lack of smooth stick forces at low speeds that Boeing had observed at high speeds years earlier in 2012. To fix the issue, Boeing decided to expand the scope and power of MCAS in several dramatic ways.

137. First, Boeing dramatically expanded MCAS's authority to move the plane's tail from the 0.6 degrees at each MCAS activation described in the Company's hazard analysis to 2.5 degrees – ***an increase of more than 300%***. Boeing made this change because at low speeds, a control surface must be deflected more to have the same effect. Turning a car at low speeds, for example, requires the driver to turn the steering wheel more than turning at high speeds.

138. But this change greatly expanded MCAS's power to push the plane into a dive. On the stabilizer, the maximum nose-down movement is approximately 4.7 degrees away from level flight. The new authority could therefore push the plane's nose down to the maximum amount in just a couple of iterations.

139. Nonetheless, no upper limit was placed on MCAS's authority to pitch the airplane. As former Boeing engineer Lemme explained, because MCAS can repeatedly reset if it receives erroneous AoA data, "it effectively has unlimited authority." Consequently, an erroneous AoA signal could and unfortunately did cause the MAX to repeatedly trim the plane 2.5 degrees on each faulty activation as pilots struggled to regain control, until the plane was completely nose-down.

140. Second, Boeing had initially designed the MCAS to trigger when the plane exceeded both an AoA and a g-force threshold. Because there are no excessive g-forces at low speed, the engineers removed the g-force factor as a trigger. This meant that a single AoA sensor was the lone safeguard against a dangerous misfire.

141. Boeing's hazard analysis submitted to the FAA stated that MCAS could move the horizontal tail a maximum of 0.6 degrees and that it would operate only in rare high speed, high

Mach conditions. But, by the time the MAX was certified on March 8, 2017, Boeing had fundamentally altered MCAS so it could repeatedly move the tail 2.5 degrees and do so at lower airspeeds and without any upper limit on its authority, in reliance on a single AoA sensor.

142. Boeing's design changes violated regulatory requirements and industry standards. As the Joint Report found, Boeing's purpose in expanding MCAS to low speed, low g-force environments "was due to unacceptable stall characteristics with [the MAX's speed trim system]." According to the Joint Report, "[e]xtension of MCAS to the low-speed and 1g environment during the flight program" made it even more clear that MCAS violated regulatory requirements that prohibit a "stall identification system" from being "vulnerable to inadvertent actuation due to a single failure."

143. Boeing also failed to demonstrate compliance with regulatory requirements for the MAX's "out-of-trim characteristics," as required by 14 CFR § 25.255. The Joint Report notes that "[t]he higher MCAS trim rate of 0.27 degrees per second was not selected for the demonstration of compliance with § 25.255, even though failures could result in un-commanded stabilizer trim movement at this rate."

144. Boeing ***entirely failed to disclose these dangerous modifications*** to the FAA officials responsible for approving pilot training requirements. The Joint Report found that the certification documents Boeing had provided to the FAA "were not updated during the certification program to reflect the changes" made to MCAS. The Joint Report further found that the documents Boeing submitted to the FAA "were not consistently updated." Moreover, even where Boeing did provide information to the FAA, the Joint Report concluded "the information and discussions about MCAS were so fragmented and were delivered to disconnected groups" that it "was difficult to recognize the impacts and implications of this system."

145. The Joint Report concluded that MCAS represented a completely unprecedented technology and had Boeing presented a full and complete picture of the system to the FAA, the plane would not have been certified without significant additional analysis that would have exposed its dangerousness:

> 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***.

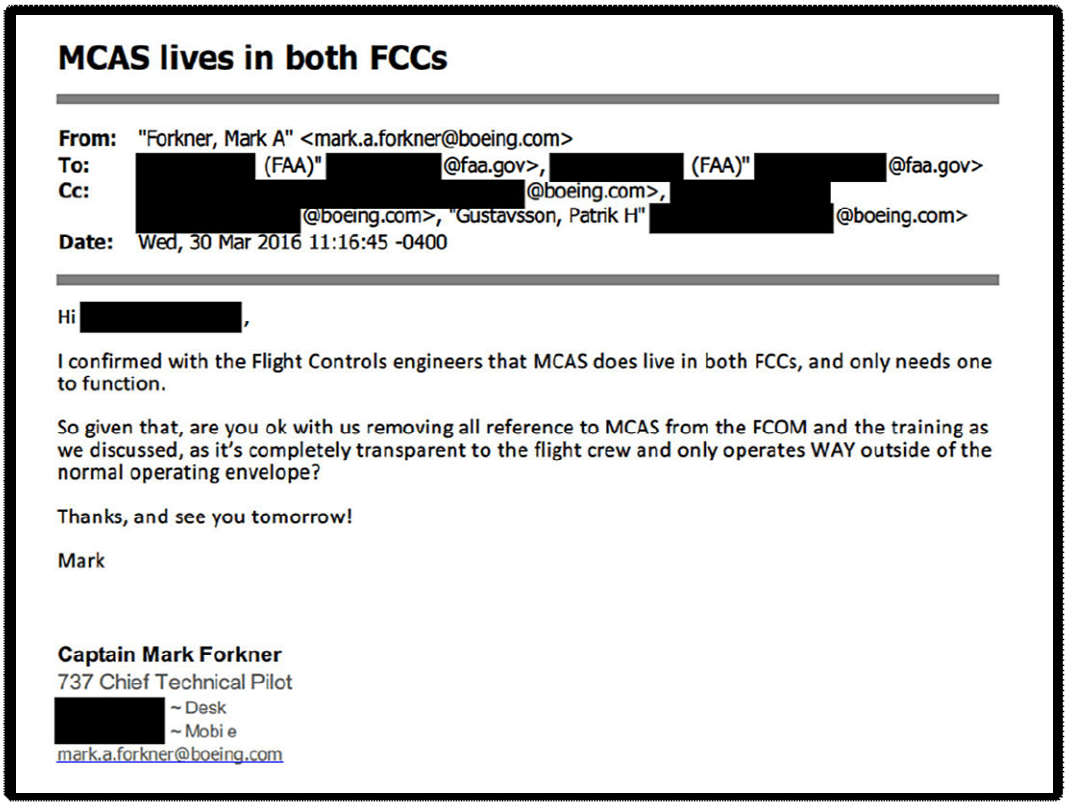
**5. Boeing "Jedi-Mind Trick[ed]" Regulators Into Deleting References To MCAS From Flight Operating Manuals**

146. After dramatically increasing the risk MCAS posed to passengers through undisclosed changes, Boeing then fought to have MCAS's very existence concealed from the pilots who would be subject to this powerful system. Boeing persuaded the FAA to remove all descriptions of MCAS from the MAX's flight manual and training materials in order to preserve the illusion of "operational commonality" with the 737 NG and avoid additional pilot training. Boeing's efforts to conceal the MCAS directly contributed to the Lion Air and Ethiopian Airlines Crashes. Indeed, the Indonesian NTSC found that Lion Air pilots were unable to respond effectively to the MCAS because ***they had no idea the system even existed***.

147. Defendants were determined to avoid any disclosures to the FAA that might trigger increased scrutiny and lead to increased costs as they developed the MAX and MCAS. For example, a June 7, 2013 email that Boeing later produced to the FAA – as part of the Company's production of documents that were turned over to Congress and the public – included minutes from a meeting that day concerning an analysis of MCAS. The analysis lists steps for Defendants to take to conceal MCAS from regulators. Although Boeing would "[i]nternally continue using the

acronym MCAS," "[e]xternally [Boeing] would communicate it is an addition to Speed Trim," because "[i]f we emphasize MCAS is a new function there may be a greater certification and training impact." The same email chain noted that "[t]his will allow us to maintain the MCAS nomenclature while not driving additional work due to training impacts and maintenance manual expansions."

148. On March 30, 2016, 737 MAX Chief Technical Pilot Forkner, who was the Company's primary liaison to the agency on pilot training for the MAX, wrote an email to the FAA asking it to approve Boeing's decision to "remov[e] all references to MCAS from the FCOM [i.e., the flight manual provided to the aircraft's crew, Flight Crew Operations Manual ("FCOM")] and the training as we discussed." In support of Boeing's request, Forkner falsely claimed that MCAS was "completely transparent to the flight crew and only operates WAY outside of the normal operating envelope."



**MCAS lives in both FCCs**

**From:** "Forkner, Mark A" <mark.a.forkner@boeing.com>
**To:** [redacted] (FAA)" [redacted]@faa.gov>, [redacted] (FAA)" [redacted]@faa.gov>
**Cc:** [redacted]@boeing.com>, [redacted]@boeing.com>, "Gustavsson, Patrik H" [redacted]@boeing.com>
**Date:** Wed, 30 Mar 2016 11:16:45 -0400

Hi [redacted],

I confirmed with the Flight Controls engineers that MCAS does live in both FCCs, and only needs one to function.

So given that, are you ok with us removing all reference to MCAS from the FCOM and the training as we discussed, as it's completely transparent to the flight crew and only operates WAY outside of the normal operating envelope?

Thanks, and see you tomorrow!

Mark

**Captain Mark Forkner**
737 Chief Technical Pilot
[redacted] ~ Desk
~ Mobile
mark.a.forkner@boeing.com

**Figure 6.** March 30, 2016 email in which Boeing's 737 MAX Chief Technical Pilot Mark Forkner requests that the agency approve Boeing's decision to "remov[e] all reference to MCAS" from the MAX flight manual and training materials based on false justifications.

149. In the email, Forkner also attempted to justify Boeing's removal of "all reference" to MCAS by claiming that as a result of system redundancies – namely, that MCAS "live[s] in both FCCs [flight control computers]" – it was highly unlikely to fail. In truth, contrary to Forkner's claims, MCAS was vulnerable to a dangerous single point of failure.

150. The FAA agreed to Boeing's request. The MAX's 1,600-page flight crew manual eventually provided to customers mentions the term MCAS once, a vestigial reference in the manual's index. Forkner later bragged about "***[J]edi-mind tricking***" regulators into accepting

inadequate MAX training that omitted any mention of MCAS and minimized the significant differences between the MAX and predecessor 737 models.[8]

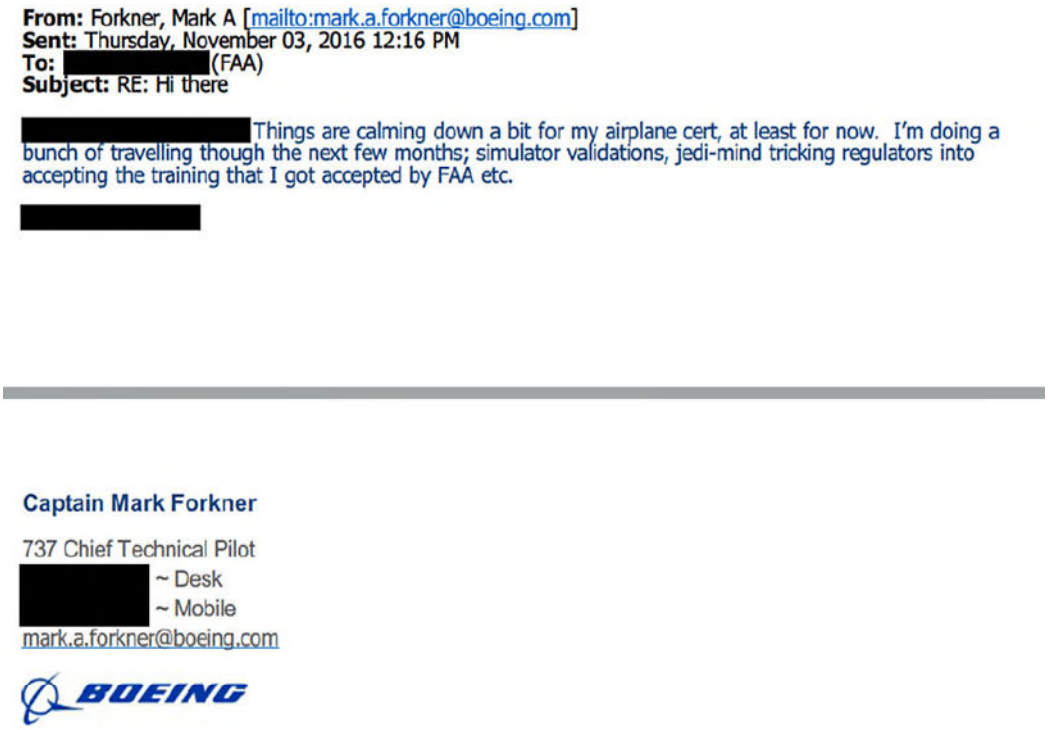



**Figure 7.** In a November 2016 email, Forkner bragged about, "[J]edi-mind tricking regulators into accepting the [MAX] training I got accepted by FAA," which "remov[ed] all references to MCAS."

The *Seattle Times* reported that Forkner has since refused to provide documents sought by federal regulators, citing his Fifth Amendment right against self-incrimination.

151. Boeing personnel also boasted about "Jedi-mind tricking" customers, including Lion Air, into believing that MAX simulator training was not necessary. In a June 6, 2017 email exchange, Forkner falsely told a customer:

> There is absolutely no reason to require your pilots to require [sic] a MAX simulator to begin flying the MAX. Once the engines are started, there is only one difference between NG and MAX procedurally, and that is that there is no OFF position on

[8] "Jedi-mind tricking" is a reference to the ability of certain characters in the *Star Wars* films to use powers of suggestion to implant thoughts and feelings in the minds of weak-willed adversaries.

> the gear handle. Boeing does not understand what is to be gained by a 3 hour simulator sessions when the procedures are essentially the same.

After successfully dissuading the customer from insisting on simulator training for its pilots, Forkner forwards the email to colleagues, writing, "***Looks like my jedi mind trick worked again!***"

152. Similarly, in a December 12, 2017 text-message exchange, an employee brags about how he made a customer "feel stupid about trying to require any additional training requirements." The employee wrote, "I just jedi mind tricked this [sic] fools. I should be given $1000 every time I take one these calls[.] ***I save this company a sick amount of $$$$***[.]"

153. The Joint Report once again concluded that Boeing had violated regulatory requirements in its efforts to rush the MAX to market and to conceal its unique design and operational features. Discussing Boeing's failure to include information about MCAS in the MAX's Airplane Flight Manual, the Joint Report pointed out that "The Boeing AFM does not include all the normal, non-normal, and emergency operating procedures as required by regulations." In particular, the Joint Report found that "[i]nformation related to MCAS functionality and failure scenarios is critical for pilot knowledge and understanding of the system as it interfaces with the aircraft's trim system and AOA inputs."

154. Then-Acting Administrator of the FAA, Daniel Elwell, who faced enormous pressure to defend his agency's certification of the MAX, acknowledged at a May 15, 2019 Congressional hearing, "MCAS should have been more adequately explained in the ops manual and the flight manual, absolutely."

155. The impact of Boeing's decision to remove all references to MCAS from the flight manual and training was momentous. It not only deprived pilots of "critical" knowledge relating the MAX's operation, it prevented the FAA's Flight Standardization Board from discovering that

the information and training provided to pilots failed to satisfy applicable regulatory requirements. The Joint Report concluded:

> During the certification process a decision was made to remove information relating to MCAS functionality from the draft Flight Crew Operating Manual (FCOM). This decision meant that the FAA Flight Standardization Board (FSB) was not fully aware of the MCAS function and was not in a position to adequately assess training needs. . . . The limited information provided to the FSB limited their ability to assess the operational impacts of failures of systems associated with MCAS and the subsequent requirements for flight crew training. With the information [the Aircraft Evaluation Group] was provided, it is reasonable to conclude that the FSB would not know the full impact of the changed design and thus would be ***unaware that they had been provided insufficient information to adequately comply with the requirements in FAA Order 8110.4C***.

### 6. Boeing's June 2018 Coordination Sheet Further Demonstrated That The MAX Failed To Meet The Company's Own Requirements

156. On June 11, 2018, Boeing engineers prepared an internal memorandum outlining several core design requirements for MCAS, called the MCAS "Coordination Sheet." The Coordination Sheet confirms that MCAS failed to meet Boeing's own design and operational requirements.

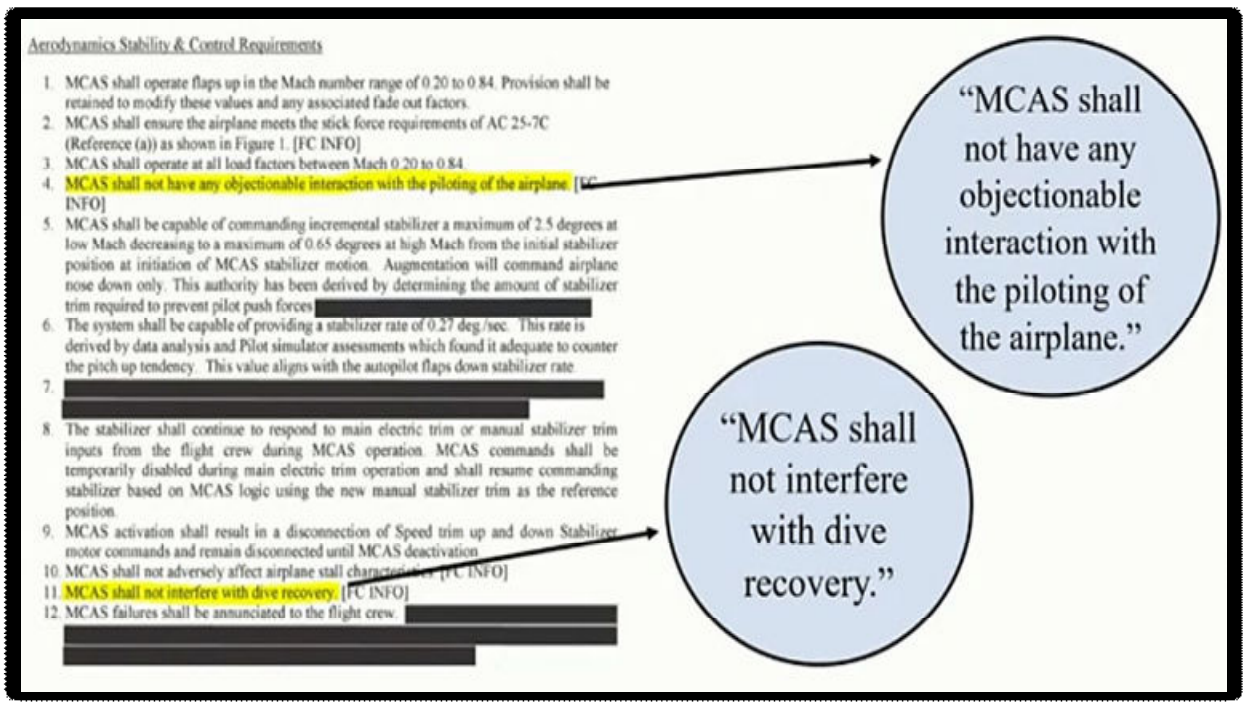


**Figure 8.** Boeing's June 8, 2011 MCAS "Coordination Sheet" outlined several core design requirements that Boeing knew the system failed to satisfy.

157. Among other things, the Coordination Sheet requires that "MCAS failures shall be annunciated to the flight crew." However, as discussed above, Boeing knew that while the MAX had initially been designed to include an MCAS failure alert, that alert was never ultimately installed. Moreover, Boeing had known since August 2017, at the latest, that the MAX's AoA Disagree Alert was inoperable on the vast majority of the MAX fleet.

158. Boeing's Coordination Sheet also required that "MCAS shall not have any objectionable interaction with the piloting of the airplane" and that "MCAS shall not interfere with dive recovery." At the October 30, 2019 Congressional hearing, Chief Engineer Hamilton admitted that MCAS failed to satisfy these design requirements. When asked, "Did MCAS affect in any way the dive recovery of Lion Air Flight number 610?" Hamilton testified, "***[I]t caused the airplane to go into a dive that the crews were not able to recover from***." Similarly, when asked, "Did MCAS affect the dive recovery of Ethiopian Airlines Flight number 302?" Hamilton testified, "Yes."

### 7. In June 2018, A Boeing Senior Manager Reported Severe Problems In The MAX's Development And Production To Defendant Muilenburg And Other Boeing Executives

159. The erroneous MCAS activations that caused both the Lion Air and Ethiopian Airlines Crashes were triggered by faulty AoA sensors. These were brand-new sensors on two brand-new planes. Unbeknownst to customers, passengers, regulators, or investors, beginning in June 2018 and continuing throughout the Class Period, Boeing executives, including Defendant Muilenburg, received clear warnings that the Boeing 737 facility in which those sensors were manufactured was experiencing serious production issues, including frequent wiring problems and

functional test issues. Boeing executives, however, ignored urgings by senior personnel at this facility to slow down production of the MAX, and, instead ***increased*** the pace of production.

160. Edward Pierson, a Senior Manager at Boeing's Renton, Washington 737 facility, who oversaw production support for 737 Final Assembly, raised alarms with executives, including Muilenburg, about the development and production issues plaguing the manufacturing facility. At a December 11, 2019 hearing, Pierson testified: "***I witnessed a factory in chaos and reported serious concerns about production quality to senior Boeing leadership months before the first crash. I formally reported again before the second crash. No action was taken in response to either of my reports***."

161. Pierson testified that, in early 2018, a cascade of damaged parts, missing tools, incomplete instructions, and a shortage of workers were preventing planes from being built on time. The 737 facility experienced a ten-fold spike in jobs that were behind schedule, and roll-out-on-time for the MAX dropped to 10%. At the same time, according to Boeing's tracking system, quality issues increased over 30%. Despite this spike in delays and quality issues, Boeing executives pushed production from 47 to 52 planes per month.

162. To meet these targets, Boeing initiated "major recovery operations" at Renton, which Pierson testified prioritized "production speed over quality." Pierson testified that "737 program leadership" were pressuring workers to complete planes and publicly berating them "about delays in front of a hundred or more of their peers." Pierson stated that "[t]here were many quality issues related to Electrical Wiring Interconnect System (EWIS) compliance, such as problems with functional testing of wiring or chaffed, cut, or pinched wires. I knew that improperly manufactured, installed, or tested wires can cause intermittent electrical or electronic data errors on critical plane systems."

163. On June 9, 2018, Pierson wrote to Scott Campbell, the Head of the 737 Program, requesting production be briefly shut down due to quality concerns. Pierson wrote that he was aware of the dangers of falling behind schedule, "[b]ut there is a much, much higher risk that we cannot lose sight of. I'm talking about inadvertently imbedding safety hazard(s) into our airplanes." Pierson wrote:

> As a retired Naval Officer and former Squadron Commanding Officer, I know how dangerous even the smallest of defects can be to the safety of an airplane. ***Frankly right now all my internal warning bells are going off. And for the first time in my life, I'm sorry to say that I'm hesitant about putting my family on a Boeing airplane***.

But Boeing's senior management did nothing in response.

164. On July 18, 2018, after conditions worsened, Pierson followed up in person with Campbell. Pierson told Campbell that while he was in the military, production would have been shut down for lesser concerns. Campbell failed to heed these warnings, replying, "***The military is not a profit-making organization.***"

165. During the summer of 2018, while Pierson was warning that the Renton facility was in disarray and was plagued by serious production issues, the facility built the planes involved in the Lion Air and Ethiopian Airlines Crashes.

166. After the October 29, 2018 Lion Air Crash, Pierson's concern heightened. He testified, "Because Boeing manufactured the Lion Air airplane at Renton in the summer of 2018, I immediately feared the chaotic factory conditions had contributed to this tragic loss of life." Pierson attempted to reach out to Boeing's Communications Office asking to speak with employees supporting the accident investigation, but to no avail.

167. On December 19, 2018, Pierson wrote a letter directly to Muilenburg again raising the widespread production issues at the 737 facility and asking for his help in contacting the Boeing

employees supporting the Lion Air Crash investigation so he could share his knowledge with them. Muilenburg never responded.

168. Instead, in early January 2019, Pierson received a call from Boeing's former General Counsel, J. Michael Luttig, whom the *Wall Street Journal* has described as a "close adviser to . . . CEO Dennis Muilenburg." Pierson spoke with both Luttig and Boeing's Assistant General Counsel, Padraic Fennelly, renewing his warnings and stressing it was important to investigate the Renton factory and interview employees. Pierson detailed the production issues at the 737 facility, including "employee fatigue and schedule pressure, aggressive leadership communication, mounting quality defects (including numerous functional test and Electrical Wiring Interconnect System problems), staffing constraints, process deviations, communications breakdowns, and others."

169. Quoting a February 2019 email to Luttig and Fennelly, Pierson testified that he "emphasized that 'the sheer volume of these issues highlights the considerable & unnecessary risk the company was (is still?) taking to meet ever increasing airplane production rates and delivery schedules" and that "production mistakes may have been made with this airplane and potentially others.'" Pierson also testified that he felt "***Boeing had misled the public about the state of 737 production***: 'Record numbers of airplanes delivered makes for good headlines, but they can belie the reality of production health.'"

170. Pierson's pleas to halt or even slow production went unheeded. As a result, on February 19, 2019, Pierson escalated his concerns to the Board of Directors in a letter that "detailed [his] internal reporting efforts and requested urgent action from the Board."

171. Pierson discovered that there had been 13 other safety incidents reported on 737 MAX jets between May 2018 and the following March, when the fleet was grounded. As Pierson

later told the Australian Broadcasting Corporation, as reported in a February 14, 2020 article, "We're talking about 380 or so airplanes, 13 incidents, two fatal crashes on top of that . . . [t]hat represents 4 per cent of 387, so basically ***one in 25 airplanes*** had already had a safety incident in its short lifespan."

172. Pierson went on to say:

> My first thought was just because we're a profit-making organisation doesn't give us the right to take chances like that with people's lives . . . . In the military we value life. Sometimes you take risk because that's the mission; but that's a conscious decision. When you take unnecessary risk, that's unacceptable.

Before Pierson received a response, Ethiopian Airlines Flight 302 – another MAX that had been manufactured at the Renton facility during the summer of 2018 – crashed on March 10, 2019, during its first month in service, killing all 157 people on board.

173. In his December 11, 2019 testimony, Pierson noted that, as discussed above, the Lion Air Crash involved a faulty AoA sensor that sent erroneous data to MCAS, triggering a system failure. The Final Accident Report and Boeing's own subsequent testing confirmed the sensor was faulty. Pierson pointed out that "No one," most especially Boeing, "has asked why two brand-new AOA sensors on two brand-new planes inspected, installed, and tested by Boeing at the Renton plant during the summer of 2018 failed. . . . It is alarming that these sensors failed on multiple flights mere months after the airplanes were manufactured in a factory experiencing frequent wiring problems and functional test issues."

### 8. In the Months Leading Up To The Lion Air Crash, Boeing Employees Repeatedly Discussed The Fact That The MAX Was Unsafe

174. Many other Boeing employees shared Pierson's urgent concerns about the MAX's safety. For example, a March 22, 2018 messenger exchange between Boeing employees discusses the Company's failure to take seriously safety issues identified by pilots at London's Gatwick Airport concerning aborted MAX landings, or "go-arounds," resulting from various aircraft

malfunctions, including "pitch oscillation during flap retraction, [instruments] commanding descent, [and] Autopilot descending." The employees state, "They do not understand the liability we as a company are taking on . . . . Not sure if I will be returning in April given this – am not lying to the FAA[.] Will leave that to ***people who have no integrity.***"

175. Discussing Boeing's efforts to deceive regulators, one employee wrote in a May 15, 2018 messenger exchange, "***I still haven't been forgiven by [G]od for the covering up I did last year***." In another messenger exchange on May 18, 2018, a Boeing employee wrote, "***I have used the words 'misleading' and 'mischaracterization' a lot over the last two years in relation to [t]his [MAX] program***."

176. In an astonishing internal text-message exchange dated February 8, 2018, one Boeing employee wrote:

> Honesty is the only way in this job – integrity when lives are on the line on the aircraft and in training programs shouldn't be taken with a pinch of salt. ***Would you put your family on a MAX simulator trained aircraft? I wouldn't***[.]

Another employee responds, "***No***."

### 9. By The Start Of The Class Period, The MAX Had Become The Best-Selling Aircraft In Boeing's History And The Largest Single Product Driver Of the Company's Revenue

177. By the start of the Class Period, the MAX quickly became the best-selling aircraft in Boeing's history and a cash cow for the Company. Boeing had secured ***more than 5,000 orders for the MAX, worth $600 billion***, that would sustain the Company for years to come. Specifically, by the start of the Class Period, Boeing had delivered more than 200 MAX aircraft and had approximately 4,800 more on back order, representing more than 75% of the Company's total commercial aircraft backlog. Orders for the MAX stretched across more than 80 airlines.

178. The MAX was the single largest product driver of Boeing's revenue during the Class Period. Although Boeing does not report the revenue contribution of individual aircraft,

Goldman Sachs analysts estimated in a March 2019 report that the MAX was responsible for ***one-third of Boeing's Company-wide revenue until 2024***. At the start of the Class Period, the 737 program was responsible for 30% of Boeing's revenue and approximately half of the 737s delivered at that time were MAXs. By 2019, Boeing's 737 output was to shift ***entirely*** to the MAX. As discussed below, following the MAX's March 2019 grounding in the wake of the Ethiopian Airlines Crash, Boeing reported in its third quarter 2019 Form 10-Q that even the temporary grounding of the MAX had cost the Company approximately $2 billion per month (almost $6 billion for the quarter) in lost product revenue ***alone***, more than 20% of Boeing's Company-wide revenue. Boeing's Form 10-Q stated that the "737 MAX grounding will continue to have a significant impact on revenues until deliveries resume."

### D. On October 29, 2018, Lion Air Flight JT 610 Crashed, Killing All 189 Passengers And Crew

179. On October 29, 2018, Lion Air Flight JT 610 departed Jakarta, Indonesia. Boeing had delivered the plane to Lion Air on August 13, 2018, just eleven weeks before the October 29 flight. The captain had more than 6,000 hours of flight experience, including 5,176 hours on Boeing's prior 737 models.

180. Even before takeoff, a malfunctioning AoA sensor was already feeding erroneous pitch data to the plane's flight computer. However, because Boeing had failed to address, or even disclose, a ***known*** defect, the AoA Disagree Alert described in the MAX FCOM failed to alert the pilots to this issue.

181. Two minutes into the flight and unbeknownst to the pilots, MCAS took over the plane. Relying on the single erroneous AoA sensor, MCAS believed the aircraft's nose was too high and activated, sensing a stall. MCAS moved the horizontal stabilizer for 10 seconds to lower the plane's nose. The flight crew radioed air traffic control to report flight control problems,

including unreliable airspeed and altitude readings. On the cockpit audio recordings, alarms can be heard blaring as air traffic controllers issued instructions. Air traffic controllers granted the pilots' request to return to Jakarta, but Lion Air Flight JT 610 never made it back.

182. Satellite data showed that Lion Air Flight JT 610 rose and fell ***more than 20 times*** as MCAS repeatedly activated, driving the plane's nose down. According to reports, the cockpit voice recorder shows that even as numerous alarms continued to sound, the pilots made numerous efforts to save themselves and their passengers' lives. One pilot searched through the MAX's flight manual for almost nine minutes trying to find the source of the problem and a solution. This effort was unfortunately in vain because of Boeing's decision to excise all mention of the MCAS system from the flight control manual.

183. Records show the other pilot praying aloud as he struggled to pull back on the control column – an action that in prior Boeing 737s (but not the MAX) would have permanently disabled any automated flight control systems. As the MCAS repeatedly activated and the speed of the plane increased, the control column got heavier. As explained in an April 2019 article by former pilot Gregory Travis, when MCAS activated to push the nose of the plane down it also pushed the pilot's control columns forward through a device Boeing calls the "Elevator Feel Computer."

184. The Elevator Feel Computer enables pilots to get physical feedback when they move the control column. In old airplanes this feedback was natural. Cables connected the control stick to the flying surfaces, so a pilot had to pull up, hard, if the airplane was trimmed to descend and had to push forward, hard, if the plane was trimmed to ascend. With the advent of powerful hydraulic systems in the 737, pilots no longer received direct feedback from the aerodynamic forces acting on the plane's control surfaces.

185. Instead, the Elevator Feel Computer uses a set of motors and jacks to put force into the control column. The computer can put so much force into the column that a human pilot can become exhausted trying to pull the column back – i.e., trying to override the MCAS malfunction by telling the plane that it should ***really*** not be descending. In Lion Air Flight JT 610's final seconds, MCAS activated several more times and the Elevator Feel Computer put tremendous forward pressure on the control stick. The pilot was pulling back on the control column with more than 100 pounds of sustained force. It was not enough.

186. Less than twelve minutes after takeoff, Lion Air Flight JT 610 entered a steep dive, hitting speeds of about 500 miles per hour, and crashed into the Java Sea. All 189 people aboard were killed.

187. Immediately following the Lion Air Crash, authorities and the public sought answers for what caused the catastrophic crash of this brand-new airplane. While the "black box" would not be located until a week after the crash, the *Associated Press* immediately reported that data from flight trackers showed "erratic speed, altitude, and direction in the minutes after takeoff" and an upward spike in vertical speed at the end of the flight followed by a downward plunge.

188. While the public could not interpret this data, Boeing knew that this pattern was consistent with a pilot struggling with the MCAS system. In fact, Boeing Commercial Airplane's ("BCA") Chief Engineer, John Hamilton, would later testify before Congress that, "In the hours following the Lion Air accident, we convened a group of experts from around the company and started postulating on what possibly could have happened given the limited data that was available. ***We quickly identified that this MCAS activation could have been a scenario***."

189. Media reports focused initially on the "mixed safety record" and "checkered past" of the "budget airline" Lion Air and Indonesia's aviation industry. In contrast, analysts and

investors were far less concerned that Boeing would be held responsible for the crash. For example, a CFRA Research analyst told the *Seattle Times* in an October 29, 2018 article that "Boeing planes have a good safety record and the accident is unlikely to hurt orders for new planes."

190. Two days after the crash, on November 1, 2018, divers in Indonesia recovered one of the Lion Air plane's recorders from the seafloor and relevant authorities began the work to reconstruct the flight data.

### E. Following The Lion Air Crash, Defendants Immediately And Falsely Blamed The Pilots And Assured The Public That The MAX Was Safe

191. After the Lion Air Crash, Defendants faced intense public scrutiny concerning the crash and whether the 737 MAX had underlying problems that rendered the plane unsafe to fly. For example, a November 6, 2018 article in *The New York Times* concerning the Lion Air Crash reported that "the model's newness means any potential problem may not yet have manifested itself in other carriers' fleets," and raised the question whether there were problems with the 737 MAX "[b]eyond a potential hardware problem – whether with computerized sensors or with instruments that measure airspeed."

192. In the face of these and similar questions, Defendants repeatedly misrepresented and concealed the fundamentally unsafe nature of the 737 MAX, the manipulated and flawed certification process through which Boeing rushed the 737 MAX to market, and Defendants' ability to adequately address the pervasive, systemic failures that rendered the 737 MAX inherently dangerous and unfit for flight.

193. In the early hours of November 7, 2018, the first day of the Class Period, Boeing issued a news release stating that the Indonesian National Transportation Safety Committee had indicated, based on its review of the flight data recorder, that Lion Air Flight JT 610 "experienced

erroneous input from one of its AOA (Angle of Attack) sensors." As a result, Boeing announced that it had issued on November 6, 2018 an Operations Manual Bulletin (OMB), "directing operators to ***existing flight crew procedures to address circumstances where there is erroneous input from an AOA sensor***."

194. Indeed, the night before, Boeing had issued a Flight Crew Operations Manual Bulletin TBC-19, with the subject "Uncommanded Nose Down Stabilizer Trim Due to Erroneous Angle of Attack (AOA) During Manual Flight Only" (the "November 6 Bulletin"). Boeing explained that, "[w]henever appropriate, Boeing, as part of its usual processes, issues bulletins or makes recommendations regarding the operation of its aircraft." In the November 6 Bulletin, Boeing represented that "erroneous AOA data" contributed to the Lion Air Crash by incorrectly guiding the plane's "pitch trim system" to trim the stabilizer nose down. Boeing did not disclose that Boeing had created a brand-new pitch trim system for the 737 MAX that performed completely differently than prior pitch trim systems. Instead, Boeing falsely represented that its existing Flight Crew Operations Manual was sufficient – suggesting that the Lion Air Crash was caused by ***pilot error*** to follow the manual – as it "direct[ed] flight crews to existing procedures to address" the "AOA failure condition" that contributed to the Lion Air Crash.

195. Boeing's statements reassured observers that the 737 MAX was technically sound and safe to fly. As one independent expert told NPR on November 8, "[w]hat this airworthiness directive is doing is basically putting airlines on notice who are flying the 737 MAX to definitely, you know, take a little extra caution in reviewing their procedures that are already published." Similarly, in a November 8, 2018 article, the *Seattle Times* quoted John Cox, a former pilot and chief executive of aviation consultancy Safety Operating Systems, as saying that, because only a

"standard pilot procedure" would counter the problem, he considered the MAX safe and "would fly on one tomorrow without hesitation."

196. On November 13, 2018, however, news reports began to emerge that the 737 MAX's "pitch trim system" – which Boeing now disclosed was called the MCAS – was in fact new to the MAX. That day, the *Seattle Times* explained that the MCAS had been incorporated into the 737 MAX design as additional "stall protection" given the plane's larger engines and the changes to the plane's aerodynamics. The *Seattle Times* further reported several pilots complaining that Boeing had not highlighted the MCAS in the pilots' operational manual as a change to operations. In response, Boeing issued a statement that "We are confident in the safety of the 737 MAX. Safety remains our top priority."

197. That same day, Defendant Muilenburg emerged to comment on the Lion Air Crash for the first time. Speaking to Fox Business Channel, Muilenburg falsely reassured the public that the 737 MAX was safe, again representing that Boeing's existing pilot training and instructions were adequate, such that the Lion Air Crash was caused by pilot error rather than underlying problems with the plane. Specifically, Muilenburg stated:

> ***The bottom line here is the 737 MAX is safe*** and safety is a core value for us at Boeing and it always has been and ***we ensure that our airplanes are safe***. In fact, this airplane went through thousands of hours of tests and evaluation, certification, working with the pilots, and we've been very transparent on providing information and being fully cooperative on the investigative activity. . . . As the Indonesian authorities have pointed out, initially, ***there were some indications of an inaccurate angle of attack signal that was being sent to the airplane and of course our airplane has the ability to handle that with procedures in place [a]nd we've already issued a couple of additional bulletins to our operators and pilots around the world that point them back to existing flight procedures*** to handle that kind of condition. . . .
>
> ***[A]gain, we ensure that we provide all of the information that's needed to safely fly our airplanes*** and this comes out of thousands of hours of testing and evaluating and simulating and providing the information our pilots need to operate our airplanes safely. And we'll continue to do that. As part of the process, we've already issued a couple of bulletins to pilots and operators that point them back to

> existing flight procedures to handle this kind of situation. [W]e're going to continue to fully cooperate with the investigation. I think it's really important [ ] – ***the bottom line here [is that the] 737 MAX is a very safe airplane and we're very confident [in that]***.

198. In response to an interviewer's question, Muilenburg expressly and falsely denied that the 737 MAX in the Lion Air Crash had "a new system that wasn't disclosed to the pilots":

> ***No.*** There are new systems on the airplane that are designed to take advantage of the capabilities of the airplane and provide control capability in high angle of attack conditions and ***those systems operate properly*** and ***again in certain failure modes if there is an inaccurate angle of attack sensor feeding information to the airplane there is a procedure to handle that***. . . . We're going to make sure that we're providing all the information necessary and appropriate training, and go back to the core value here . . . ***[T]he airplane is safe. We know how to fly it safely.*** And we're very confident [in that]. . . .

199. Muilenburg also again falsely pointed to the FCOM as being complete and adequate. When asked whether Boeing provided "information in terms of what to do should something change, ***was that information available to the pilots***? Did they know how to operate it? Should the nose be in a different position?" Muilenburg responded, "***Yes, in fact that's part of the training manual. It's an existing procedure. So the bulletin we put out again last week, and over the weekend pointed to that existing flight procedure.***"

200. Muilenburg's interview had the intended effect of calming concerns in the market about the newly disclosed MCAS. Speaking to the *Associated Press* on November 13, 2018, after Defendant Muilenburg's Fox News appearance, Jon Weaks, a 737 captain and president of the pilots' union at Southwest Airlines, said that while he was "not pleased" about the omission of the MCAS information from the operations manual, he was satisfied that "we have been given, finally, the correct information." Similarly, on the same day, UBS analysts, after "conversations with industry experts, pilots, & public comments/releases from Boeing and the FAA," observed that the referenced "existing flight procedure" was a "memory" item for pilots – meaning that they are basic and critical procedures to non-routine events, such that pilots are specifically trained to

memorize the specific steps and to respond instinctively. UBS noted that the 737 MAX pilots would have been trained on this procedure. Accordingly, UBS maintained its "Buy" rating for Boeing, seeing "nothing at this point to deter our positive bias on shares of Boeing and continue to see most probable outcomes having limited materiality to [Boeing's] financials or product demand."

201. On November 16, 2018, the *Seattle Times* reported in an article titled "Dispute arises among U.S. pilots on Boeing 737 MAX system linked to Lion Air Crash" that U.S. pilot leadership continued to debate whether Boeing should have provided more information about the MCAS for the pilots to fly the planes safely. The pilot unions for United Airlines, Southwest Airlines, and American Airlines – the three American airlines flying 737 MAX planes – sent a formal letter to the FAA and the NTSB complaining about the "significant information gap" in information provided to pilots about the MCAS. In the article, United Airlines pilot union chairman Todd Insler disagreed with his union's letter and adopted the Boeing position, arguing that pilots did not need to know about the MCAS, and that the Lion Air pilots should have simply used the standard procedure to which Boeing had referred in the November 6 bulletin: "The story here is not why we didn't know about (the new system), it's why the pilots didn't fly the plane[]" (alteration in the original).

202. On November 19, 2018, Boeing announced, and then cancelled, a conference call with airlines worldwide to answer questions about the 737 MAX planes. Instead, on November 21, 2018, Defendant Muilenburg sent a blast email to all employees of Boeing, expressing confidence in the safety of the MAX and disputing media reports. As reported by the *Seattle Times*, Muilenburg sought to counter what he called "false assumptions" and "speculation," stating, "First, ***the 737 MAX is a safe airplane*** designed, built and supported by skilled men and

women." Second, Muilenburg "disputed specific reports" concerning the MCAS, including "specifically den[ying] reports in some media outlets that the procedure pilots need to deal with [the MCAS's] uncommanded movements was not in the 737 pilot manual and that pilots were not trained on how to handle it." Muilenburg expressly stated: "***That's simply untrue***."

203. According to the article, Muilenburg's email concluded that Boeing would not "debate details in the media so as not to 'violate the integrity of the investigation.'"

204. That same day, on November 21, 2018, Boeing issued and posted on its website a press release titled "Statement on Lion Air Flight JT 610 Investigation," in which the Company stated that it was "taking every measure to fully understand all aspects of this accident, working closely with the investigating team and all regulatory authorities involved," reiterated that "***[w]e are confident in the safety of the 737 MAX***," and "re-emphasize[d] existing procedures for these situations."

205. On November 27, 2018, Indonesia's NTSC released its preliminary accident investigation report concerning the Lion Air Crash. The NTSC issued detailed findings concerning, among other things, the fraught, futile fight by the Lion Air pilots to keep the plane's nose up as MCAS repeatedly forced the plane's nose downward. As the *Seattle Times* reported, the NTSC's report indicates that the Lion Air pilots "mysteriously" did not do what the pilots the day before had done – and what Boeing indicated was the appropriate counter measure – which was to "simply" switch off the flight-control system. The *Seattle Times* indicated that the pilots' failure to do so was "baffling." According to independent consultant Peter Lemme, a former Boeing flight-controls engineer, as quoted in the article, "This airplane should not have crashed. There are human factors involved."

206. The same day, November 27, 2018, in response to the NTSC's preliminary report, Boeing issued a lengthy public statement again disputing that the MAX was unsafe and falsely providing its "***assurance that the 737 MAX is as safe as any airplane that has ever flown the skies***." Boeing again blamed pilot error for the crash. Boeing detailed the actions taken by the pilots on the October 28 flight (the day before the crash), including the runaway stabilizer non-normal checklist, which is what Boeing prescribed to address the MCAS issues. Boeing pointed out that the remainder of the October 28 flight was "uneventful." Boeing pointed out that, "Unlike as is stated with respect to the prior flight, the report ***does not state whether the pilots [on the October 29 flight] performed the runaway stabilizer procedure or cut out the stabilizer trim switches***."

207. According to a November 29, 2018 *Washington Post* article titled "Boeing CEO addresses flight system update after criticism from pilots," as the Indonesian investigation proved inconclusive, Boeing "stepped up [its] engagement" with airlines and pilots. Customers and their passengers, a Boeing spokesperson told the *Washington Post*, "have our assurance that the 737 Max is as safe as any airplane that has ever flown the skies."

### F. Throughout The Class Period, Defendants Misleadingly Reassured The Public, Even As Evidence Continued To Mount Internally That The MAX Was Dangerously Unsafe

208. Contrary to their reassuring statements affirming the MAX's safety and blaming the Lion Air Crash on the pilots, Boeing's senior executives knew from the start of the Class Period – indeed, ***within a week*** of the Lion Air Crash – that the MAX was unsafe, that MCAS had played a critical role in the crash, that the likelihood of a deadly MCAS failure was far greater than Boeing had presented to the FAA, and that significant software fixes would be required to address the dangerous deficiencies in the MAX's design. At a public October 30, 2019, Congressional hearing, BCA Chief Engineer John Hamilton testified:

> In the hours following [the] Lion Air accident we convened a group of experts from around the company and started postulating on what possibly could have happened given the limited data that was available. ***We quickly identified that this MCAS activation could have been a scenario***. . . . ***And, once the flight data recorder came up later in the week and – and verif[ied] what we had[,] we started working on a software change immediately to start working that***.

209. Hamilton further testified that the Lion Air Crash had demonstrated that the critical assumptions underlying the functional hazard analysis Boeing submitted to the FAA, including pilot reaction time, were affirmatively false:

> [Boeing] separately convened a Safety Board and determined that was not enough, just the software, change to mitigate the risk. [A]nd we determined that while the crew – the captain of Lion Air was trimming out the airplane as [he] was getting MCAS, when he hand over control, ***it didn't quite follow the assumptions that we had based the design on***.

210. Thus, within the first week following the Lion Air Crash, Boeing knew that the crew action it had expected had not occurred, even on the Lion Air flight preceding the crash, in which the pilots managed to recover. And while Boeing's safety analysis had inexplicably assumed that the failure of a single AoA sensor was a remote possibility, the Company knew by the start of the Class Period that such an event had happened ***twice*** on successive Lion Air flights, both on the crashed flight and on the prior flight.

211. Yet Defendants continued to issue misleading statements affirming the MAX's safety and allowed the aircraft to continue flying for months until the entire world grounded the fleet days after the Ethiopian Airlines Crash.

212. Likewise, in the days after the Lion Air Crash, the FAA officials made clear that they believed Boeing's efforts to conceal the dangerous changes made to MCAS prevented the FAA from effectively evaluating the system's safety. Specifically, as later reported by *The New York Times* in July 2019, the FAA invited Boeing executives to the FAA's Seattle headquarters immediately after the Lion Air Crash. The FAA officials sat incredulous as Boeing explained the

details of MCAS. In the middle of this conversation, an FAA employee "interrupted to ask a question on the mind of several FAA engineers: Why hadn't Boeing updated the safety analysis of a system that had become so dangerous?"

213. Meanwhile, Boeing began quietly working on fixes to MCAS's deadly software, even as it continued to publicly blame Lion Air pilots for the crash. The nature of the fixes Boeing began making to MCAS's software within a week of the Lion Air Crash – much of which was ***not disclosed until March 2019***, after the Ethiopian Airlines Crash – further demonstrate that Boeing executives understood that MCAS had numerous unsafe design flaws that needed to be corrected, all of which Defendants knew by no later than the beginning of the Class Period, as discussed in Sections IV.A-C above. Specifically, Boeing's software fixes were planned to:

- Require that MCAS use ***two*** AoA sensors to trigger activation, eliminating the single point of failure that should never have been included in the design.
- Install the AoA Disagree Alert that was supposed to be standard from the start. The flight control computer was to compare data from both AoA sensors and, if they disagreed by 5.5 degrees or more, MCAS would be disabled and the AoA Disagree Alert would display.
- Ensure that MCAS does not have continuous authority; it would activate once, not repeatedly for each AoA event.
- Impose an MCAS command limit. MCAS can never command more stabilizer input than can be counteracted by the flight crew pulling back on the control column. The pilots will always have the ability to override MCAS and manually control the plane.

214. Boeing executives received multiple warnings in private meetings with customers that pilots did not have what they needed to safely fly the MAX. On November 27, 2018, Boeing executives, including Vice President of Product Development Mike Sinnett, 737 MAX Chief Pilot Craig Bomben, and Director of Transportation Policy John Moloney, had a closed-door meeting with American Airlines pilots. In this meeting, which was later described by *The New York Times* in a May 14, 2019 article, the pilots demanded that Boeing explain why the MCAS software was

not highlighted as a key difference from prior 737 models. Michael Michaelis, American Airlines's union safety chairman, excoriated the Boeing executives for the Company's glaring misconduct, "***These guys didn't even know the damn system was on the airplane, nor did anybody else***." Likewise, Todd Wissing, another American Airlines pilot, was also incredulous that no mention of MCAS had been included in the training manual for the MAX, telling the executives, "***I would think that there would be a priority of putting explanations of things that could kill you***." The American Airlines pilots told Boeing that it should update its flight-control software, provide more training, modify the external sensors that measure the direction of the aircraft, and make changes to how MCAS is activated.

215. Boeing's senior management recognized from the start of the Class Period that customers and pilots were inadequately informed about MCAS. On November 13, 2018, Boeing sent a letter to the FAA requesting permission to update the 737 MAX 8's flight manual to include MCAS, but said nothing to investors, much less the pilots or the thousands of people who continued to fly the fatally defective 737 MAX aircrafts on a daily basis. Boeing's planned remedial measure also included the additional pilot training specifically on MCAS it tried so hard to avoid in the run-up to the MAX's certification.

216. Those were not the only warnings Boeing received during the Class Period that pilots required additional information and training about MCAS to safely operate the MAX. As the *Dallas Morning News* later reported, from November 2018 until the Ethiopian Airlines Crash in March 2019, the FAA's Aviation Reporting System received numerous complaints from U.S. pilots concerning the aircraft's unexpected behaviors, and how the crew manual lacked any description of the system.

217. For example, in November 2018, one pilot wrote:

> I think it is unconscionable that a manufacturer, the FAA and the airlines would have pilots flying an airplane without adequately training, or even providing available resources and sufficient documentation to understand the highly complex systems that differentiate this aircraft from prior models. The fact that this airplane requires such jury rigging to fly is a red flag. Now we know the systems employed are error prone – even if the pilots aren't sure what those systems are, what redundancies are in place, and failure modes. I am left to wonder: what else don't I know?

218. Another captain called the flight manual "***inadequate and almost criminally insufficient***."

219. Pilots also expressed confusion about the 737 MAX's features. For instance, a pilot wrote, "I reviewed in my mind our automation setup and flight profile but can't think of any reason the aircraft would pitch nose down so aggressively." While another pilot wondered, "How can a Captain not know what switch is meant during preflight setup? ***Poor training and even poorer documentation; that is how***."

220. Indeed, pilots have since explained why, without clear explanation and training, 737 MAX pilots would not perceive MCAS seizing control of the plane and forcing a dive as a "runaway stabilizer" situation. Runaway stabilizer typically occurs when the autopilot malfunctions. This is a situation with which all pilots are trained to deal and is easily addressed, because the autopilot automatically disengages when pilots operate the manual electric trim switches or when pilots give contrary commands through moving the central column. Runaway stabilizer when the autopilot is ***not*** engaged, which is when the MCAS was designed to kick in, is exceedingly rare and pilots are not expecting it to occur. Then, when MCAS did kick in, the key shared characteristic with a runaway stabilizer – uncommanded movements of the trim wheel – presented very differently. In a runaway stabilizer situation, the wheel turns continuously. But MCAS fired the trim motor intermittently, causing the trim wheel to start and stop turning repeatedly. Thus, it was never a reasonable assumption that pilots would treat an MCAS

malfunction as a runaway stabilizer, particularly when they did not even know that the MCAS existed.

221. Incredibly, as discussed above, during the closed-door meeting with pilots on November 27, 2018, Sinnett ***admitted*** that a functioning AoA Disagree Alert ***would have prevented the Lion Air Crash***. As the *Wall Street Journal* reported in a March 29, 2019 article, Sinnett told American Airlines's pilot union that their pilots wouldn't experience the sort of problems that doomed the Lion Air flight. According to Dan Carey, American Airlines's pilot's union president, Sinnett told the pilots:

> That's because American paid for an additional cockpit warning light that would have alerted them to the problem, while Lion Air and most other airlines didn't.
>
> **"*This wouldn't have happened to you guys*,"** Mr. Carey recalled Mr. Sinnett saying during the meeting. ***The cockpit indicators would have directed pilots to have the potential problem checked out on the ground.***

222. The American Airlines pilots also urged Boeing to push regulators to issue an "emergency airworthiness directive" – an FAA directive issued when an unsafe condition exists that requires immediate action by an aircraft owner or operator – that would likely have taken the MAX temporarily out of service. Michaelis grilled the Boeing executives about why they would not push the FAA to issue the directive, "My question to you, as Boeing, is why wouldn't you say this is the smartest thing to do? Say we're going to do everything we can to protect th[e] traveling public in accordance with what our pilots unions are telling us."

223. Moreover, as the *Wall Street Journal* reported in a May 15, 2019 article, in explaining to American Airlines pilots why a software fix shouldn't be rushed, Sinnett admitted during the same November 27, 2018 meeting – over three months before the Ethiopian Airlines Crash – that MCAS was "***flight-critical software***." As discussed above, industry standards and applicable regulations preclude "flight-critical" components, like MCAS, from being susceptible

to any single points of failure. Thus, by Sinnett's own admission, Boeing knew from the start of the Class Period that the MAX should not have been allowed to fly until MCAS was redesigned and rebuilt to include necessary redundancies.

224. Astonishingly, while Sinnett steadfastly refused to take any action that would result in the MAX's grounding, he admitted that, at that point, Boeing ***did not even know if its "design assumptions" were valid***, even as Defendants made public statements unequivocally assuring the investors, customers, and passengers that the MAX was safe. As *The New York Times* later divulged in a May 14, 2019 article, Sinnett told the pilots that in the Company's ongoing investigation "***[o]ne of the questions will be, is our design assumption wrong?*** We're going through that whole thought process of, ***'were our assumptions really even valid when we did this?***'"

225. Dennis Tajer, a 737 captain and a spokesperson for the Allied Pilots Association stated in a March 25, 2019 *Bloomberg* article, "Our entire relationship changed after that meeting. I don't need to know about every rivet, but ***I do need to know about something that's going to take over my airplane***." American Airlines's union safety chairman, Michael Michaelis, said, "It was a very frank discussion. This is to our knowledge the first time pilots were not informed of a major system on an airplane that could affect flight controls."

226. In February 2019, Boeing provided the DOJ with documents, including 737 MAX Chief Test Pilot Forkner's 2016 text messages highlighting how MCAS was malfunctioning in the flight simulator, just as it had on both Lion Air flights. At this point, Muilenburg and other members of Boeing's senior management were aware of these text messages, but did nothing to ground the 737 MAX to address its fatal flaws.

## V. THE TRUTH EMERGES AS INVESTORS LEARN BOEING CUT CORNERS IN DESIGNING THE MAX, DECEIVED REGULATORS, AND RUSHED THE DEADLY 737 MAX TO MARKET

### A. March 10, 2019: Ethiopian Airlines Flight ET 302 Crashed Shortly After Takeoff

227. On March 10, 2019, Ethiopian Airlines Flight ET 302, a Boeing 737 MAX, departed Addis Ababa, Ethiopia, bound for Nairobi, Kenya. Boeing had delivered the plane to Ethiopian Airlines less than four months earlier. The captain of Ethiopian Airlines Flight ET 302 had more than 8,000 hours of flying experience, including on Boeing 737s.[9]

228. One minute into the flight, MCAS activated and forced the nose of the plane downwards for nine seconds, with the cockpit's warning system sounding "DON'T SINK" alarms. The pilots fought back against the automated dive and briefly had the plane climbing. Seconds later, MCAS re-engaged and pushed the plane's nose down again, triggering more squawks of "DON'T SINK" from the plane's warning systems.

229. Following the procedures outlined by Boeing following the Lion Air Crash, and as set forth in the operations manual, the pilots flipped two switches and disconnected the electric trim motor, and then tried to regain control. However, having cut electric power to stop the MCAS from seizing control of the plane, the pilots had also eliminated their ability to use the electric switch to trim the stabilizer back into a neutral position. Instead, the pilots were now forced to crank the wheel by hand – a physical process requiring significant brute strength given the

[9] Ethiopian Airlines had a history of excellent safety and a large fleet — the biggest in Africa — of modern Boeing and Airbus airplanes. It's a leading member of Star Alliance, the largest airline alliance in the world, along with names such as Lufthansa, United Airlines and Singapore Airlines. As an alliance member, it must maintain stringent safety protocols. The airline has a safety rating of six stars out of a possible seven on respected aviation site AirlineRating.com. Those ratings are based on safety rankings from international regulatory bodies and how often airlines have fatalities.

aerodynamic forces buffeting the stabilizer. Despite pulling the wheel with all of their might, the pilots could not get the stabilizer to budge.

230. Throughout this time, the pilot was pulling back on the yoke with all of his force. But it was no use because the aerodynamic forces working on the control surfaces were too strong. When the pilots attempted to activate the electronic trim switches in order to pull the plane's nose up, MCAS reactivated, seized control of the plane again, and forced it into a steep dive. Less than one minute later, Ethiopian Airlines Flight ET 302 crashed in a farm field at nearly 700 miles per hour, killing all 157 people on board instantly and creating a crater nearly 100 feet deep.

231. The public immediately focused on the similarities between the Ethiopian Airlines and Lion Air Crashes. Both occurred less than fifteen minutes after takeoff, in clear weather, and involved brand-new 737 MAX aircraft with experienced pilots at the helm. As *Flight Global* reported, "Loss of the Ethiopian Airlines Boeing 737 Max 8, just a few minutes after take-off, is likely to stir disquiet over the re-engined type which emerged during the probe into a Lion Air Max 8 accident." A *Wall Street Journal* article from the early morning hours of March 11, 2019 similarly reported, "a former [FAA] official said regulators likely would focus fact-finding efforts in part on potential relationships between the accidents . . . ."

232. Analysts also focused on the similarities between the Ethiopian Airlines Crash and the Lion Air Crash. For example, in a March 11, 2019 report, Cowen analysts stated, "The Ethiopian 737 MAX crash ***is a near term overhang*** given it looks similar to last October's Lion Air disaster." The Buckingham Research Group ("BRG") published a note on March 11, 2019, titled, "Another MAX 8 Crash - Expect Shares to Dip," reporting, "***[E]xpect shares to fall Monday due to investor concerns over the ramifications from a second 737 MAX 8 crash over the***

***weekend*** . . . we think investors are likely going to focus on the fact that a second MAX 8 aircraft crashed with optical similarities to the Lion Air MAX 8 crash that occurred on October 29th."

233. The crashes of two brand-new airplanes of the same new model in just five months was too much of a coincidence for aviation regulators and airlines worldwide. Immediately following the crash, on March 10, 2019, multiple foreign aviation regulators ordered the temporary grounding of 737 MAX planes, including regulators in China, Indonesia, and Mongolia.[10] On March 11, 2019, Ethiopian Airlines announced that it had grounded all four of its remaining 737 MAX jets, and multiple other airlines, including Aerolineas Argentina, Cayman Airways, Comair, Eastar Jet, Gol Transportes Aéreos, and Royal Air Maroc, all stopped flying their MAX planes. On March 12, 2019, the groundings continued: regulators in Singapore, India, Turkey, Australia, and Malaysia, among others, issued directives to ground the 737 MAX. Other jurisdictions, such as the United Kingdom, banned the 737 MAX from their airspace altogether. The European Union Aviation Safety Agency (EASA) announced the suspension of all 737 MAX flights in Europe, publishing a Safety Directive stating that the ban was imposed due to, among other things, "***similarities with the Lion Air accident data***" and the "unusual scenario of a 'young' aircraft experiencing 2 fatal accidents in less than 6 months."

234. In response, Boeing stock declined 11%, falling from $422.54 on March 8, 2019 to $400.01 per share at the close of trading on March 11, 2019, and continued its fall to close at $375.41 on March 12, 2019 on high volume. In total, over the two-day trading period following the Ethiopian Airlines Crash, Boeing's stock price plummeted $47.13 per share, erasing $26.63 billion of Boeing market capitalization – ***the Company's worst two-day drop in a decade***.

[10] These announcements occurred prior to the opening of the market on March 11, the first day of trading following the Ethiopian Airlines Crash.

235. On March 11, 2019, Defendants made false reassuring statements to mitigate the market's negative reaction to the devastating news of the crash and the worldwide groundings. That day, Boeing issued "A Statement on 737 MAX Software Enhancement," stating that "***Safety is a core value for everyone at Boeing*** and the safety of our airplanes, our customers' passengers and their crews is always our top priority." It also said that "[t]he 737 MAX is a safe airplane," and "***MCAS does not control the airplane in normal flight; it improves the behavior of the airplane in a non-normal part of the operating envelope***." Defendants stated that the software fix was something that Boeing had been working on "***[f]or the past several months and in the aftermath of the Lion Air [Crash]***."

236. Boeing's March 11, 2019 statement also called into question the pilots' capabilities (as Defendants did after the Lion Air Crash), stating:

> Boeing's 737 MAX Flight Crew Operations Manual (FCOM) already outlines an existing procedure to safely handle the unlikely event of erroneous data coming from an angle of attack (AOA) sensor. ***The pilot will always be able to override the flight control law using electric trim or manual trim***. In addition, it can be controlled through the use of the existing runway stabilizer procedure.

Not only did Boeing assign blame for the crash on the pilots, but falsely claimed that the FCOM "already outlines an existing procedure" to react to MCAS. Boeing concluded the note by stating, "It is still early in the investigation, as we seek to understand the cause of the accident."

237. Boeing's statements falsely assured investors that Defendants had the situation under control and were promptly responding to the MAX's safety problems.

238. Defendants' false reassurances had their desired effects. Analysts, trusting Defendants, downplayed concerns about Boeing's long-term risk related to the 737 MAX crashes. For example, on March 11, 2019, Cowen analysts, crediting Boeing's assurances that they had already spent months working on a software fix, minimized the plane's grounding by foreign regulators as "near term reputational negatives." Cowen concluded, "The near term could look

worse for Boeing depending upon what the FAA does. ***But we don't see this as a long term problem***; and the traveling public has had a very short memory of previous catastrophic crashes."

239. In a March 11, 2019 report, Jefferies analysts wrote, "There is likely a confluence of events that led to both incidents with a simple scenario likely captured during flight testing and development." Regarding the plane's grounding by regulators around the world, Jefferies cautioned that it was "Too Early to Jump to Conclusions" and that "[a]ircraft typically go through thousands of hours of in-flight tests leading up to certification, which would likely uncover issues around safety." On the same day, analysts at BRG expressed disbelief that a Boeing lapse could be to blame for the 737 MAX crashes, based upon widely accepted information about Boeing, and wrote:

> BA aircraft (and commercial aircraft in general) are among the safest products manufactured. Software used on BA aircraft can't fail. ***Systems have back-ups and back-ups have back-ups***. Maintenance is mandatory and not optional. Once designed aircraft go through a rigorous testing process (with Government oversight) of every system that takes years to complete. ***We can't name a product that goes through a more rigorous quality and safety process.***

240. Notably, however, on March 12, 2019, the *Wall Street Journal* reported that the necessary changes to MCAS were more extensive than Defendants had previously disclosed. Specifically, the *Wall Street Journal* reported that Boeing was "making an extensive change to the flight-control system in the 737 MAX aircraft involved in October's Lion Air Crash in Indonesia, going beyond what many industry officials familiar with the discussions had anticipated." The article continued, "***The change would mark a major shift from how Boeing originally designed a stall-prevention feature in the aircraft***."

241. On March 12, 2019, Defendants issued a statement concerning foreign regulators' and airlines' decisions to ground the 737 MAX. In that statement, Boeing said, "***[W]e have full confidence in the safety of the 737 MAX***." To reassure investors, the statement characterized the

737 MAX groundings around the world as "agencies and customers [making] decisions that they believe are most appropriate ***for their home markets***." Boeing then said, "[B]ased on the information currently available, ***we do not have any basis to issue new guidance to operators***." Defendants continued to mislead investors by concealing what they knew about the dangers posed by the rushed design and production of the 737 MAX and the perilous conditions the plane could create for unsuspecting pilots.

242. Notwithstanding Boeing's confident statements, the next day, on March 13, 2019, the FAA issued an emergency order grounding all 737 MAX planes. Then-Acting Administrator of the FAA, Daniel Elwell, said the decision was based on analysis of flight data showing that the "track of the Ethiopian Airlines flight was very close – and behaved very similarly – to the Lion Air flight."

243. As noted above, it was reported that Defendant Muilenburg had personally called the President in an attempt to circumvent the FAA. Citing two people familiar with the call, *The New York Times* reported that on the call Muilenburg "made the case that the 737 MAX planes should not be grounded in the United States."

### B. March 17, 2019: The *Seattle Times* Published A Report Revealing Flaws And Deception In The Certification Process For The 737 MAX

244. On Sunday, March 17, 2019, the *Seattle Times* released an investigative report detailing numerous critical problems with the 737 MAX's safety features, as well as Boeing's manipulation of the System Safety Analysis – a different name for the Functional Hazard Analysis submitted to the FAA, which is discussed above. The report was based on interviews with current and former engineers directly involved with the System Safety Analysis, and stated that "the original safety analysis that Boeing delivered to the FAA for a new flight control system on the MAX had several crucial flaws." The report continued, "the System Safety Analysis on MCAS,

just one piece of the mountain of documents needed for certification, was ***delegated to Boeing***."

Among the *Seattle Times*'s other revelations were that, as discussed above in Section IV.C, the System Safety Analysis (i.e., Functional Hazard Analysis) submitted to the FAA:

- Understated the power of the new flight control system, which was designed to swivel the horizontal tail to push the nose of the plane down to avert a stall. When the [737 MAX] planes later entered service, MCAS was capable of moving the tail more than four times farther than was stated in the initial safety analysis document;

- Failed to account for how the system could reset itself each time a pilot responded, thereby missing the potential impact of the system repeatedly pushing the airplane's nose downward; and

- Assessed a failure of the system as one level below "catastrophic." But even that "hazardous" danger level should have precluded activation of the system based on the input from a single sensor – and yet that's how it was designed.

Notably, the article observed that "***[b]oth Boeing and the FAA were informed of the specifics of this story and were asked for responses 11 days ago, before the second crash of a 737 MAX on March 10[, 2019]***."

245. The contents of the *Seattle Times* report on March 17, 2019 partially revealed both the extent to which Boeing had control over the certification process, and the possibility that Boeing had mischaracterized certain information submitted to the FAA.

246. Over the following days, *Bloomberg* and the *Wall Street Journal* reported that the DOJ has commenced a criminal investigation into Boeing after the Lion Air Crash in October 2018, which had taken on new urgency after the Ethiopian Airlines Crash. On March 18, 2019, *Barron's* published a story titled, "Why Investors May Be Underestimating Boeing's Problems," which stated:

> The revelation that a grand jury is looking into safety certifications means investors will have to brace for more volatility. ***In coming months, investors will hear about derivative aircraft, jet design, and FAA certification. Those are topics that don't usually come up when investing in commercial aerospace, so the market will learn together***.

247. In response, Boeing stock fell 1.77% to close at $372.28 per share on March 18, 2019, on high volume. The single-day drop erased $3.79 billion of Boeing's market capitalization.

248. Defendants continued to issue misleading statements to the market in order to reassure investors and push back against these negative disclosures. On March 18, 2019, Defendant Muilenburg released a letter and video reassuring the market that the 737 MAX was safe and was just being made safer. The statement said, "***Safety is at the core of who we are at Boeing***, and ensuring safe and reliable travel on our airplanes is an enduring value and our absolute commitment to everyone." It continued, "Work is progressing thoroughly and rapidly to learn more about the Ethiopian Airlines accident and understand the information from the airplane's cockpit voice and flight data recorders." Boeing again focused on the forthcoming software fix, saying, "***Soon we'll release a software update and related pilot training*** for the 737 MAX that will address concerns discovered in the aftermath of the Lion Air Flight 610 accident. . . . Our entire team is devoted to the quality and safety of the aircraft we design, produce and support."

249. In addition to the letter from Muilenburg that Boeing posted on its website, there was an accompanying video of Muilenburg delivering the message. As part of that video, Muilenburg included statements not included on printed script, including:[11]

- "We're taking action to fully reassure airlines and their passengers of the safety of the 737 MAX." (1:19 – 1:27);
- "We're also committed to making safe airplanes even safer and providing the best products, training and support to our global airline customers and pilots." (1:49 – 1:59); and

[11] The video has several clear points where multiple takes are put together for one statement, including adjustments to the camera frame, suggesting that Defendants edited and/or reworked Muilenburg's statement in the video, which as noted below, does not match the printed text on Boeing's website directly beneath the video. *See* https://boeing.mediaroom.com/2019-03-18-Letter-from-Boeing-CEO-Dennis-Muilenburg-to-Airlines-Passengers-and-the-Aviation-Community.

- "Our entire team stands behind the quality and the safety of the aircraft we design, produce, and support. A deep sense of commitment I personally share with them." (2:30 – 2:41).

250. These statements continued to misrepresent and conceal the full truth about the magnitude of the 737 MAX's safety failings, including the extent to which Boeing already knew about the risks posed to the safety of the plane and its operators and passengers, the scope of the changes that would have to be made to make the MAX safe to fly again, and the impact of these issues on Boeing's business.

### C. March 21, 2019: *The New York Times* Reported That Both The Lion Air And Ethiopian Airlines Planes Did Not Have Safety Features Related To MCAS, Because Boeing Sold Them As Optional Upgrades

251. On March 21, 2019, *The New York Times* reported new information to the market in an article entitled, "Doomed Boeing Jets Lacked 2 Safety Features That Company Sold Only as Extras." Prior to this report, Boeing had concealed the optional nature of these seemingly critical safety features from investors, airlines, pilots, and passengers.

252. In the March 21, 2019 article, *The New York Times* reported, "As the pilots of the doomed Boeing jets in Ethiopia and Indonesia fought to control their planes, ***they lacked two notable safety features in their cockpits [because] Boeing charged extra for them***." The article explained, "Many airlines, especially low-cost carriers like Indonesia's Lion Air, have opted not to buy [optional features to enhance safety systems]." The article revealed that the two features were the "angle of attack indicator" and the "disagree light." As explained above, the former displays the readings from the plane's two AoA sensors, while the latter activates when the two sensors' data are mismatched. As quoted in the article, Bjorn Fehrm, an aeronautical engineer and analyst at the aviation consultancy Leeham, said the two safety features "are critical, and cost almost nothing for the airlines . . . ***[b]ut they're vital for safety***."

253. Also on March 21, 2019, *ExtremeTech* picked up the optional safety feature story from *The New York Times* and described the revelations succinctly: "[N]ew information indicates that Boeing sells upgrades to critical flight systems [such as MCAS] that might have improved their overall safety – but it sells them as value-added profit centers in much the same way you might add a stereo option to a car."

254. In response to the March 21, 2019 reports, Boeing stock fell from $376.16 per share on March 20, 2019 down $3.46 per share to a closing price of $372.70 per share on March 21, 2019, erasing $1.95 billion of Boeing's market capitalization.

255. Defendants, however, continued to conceal the extent to which the safety problems with the MAX, including with MCAS, were known within Boeing and would cause long delays in the 737 MAX's return to service.

### D. April 5, 2019: Boeing Announced A Pullback In The 737 MAX Production Rate

256. On April 4, 2019, Ethiopia's Aircraft Accident Investigation Bureau released a preliminary accident investigation report. As Ethiopian Transport Minister Dagmawit Moges told reporters, the report indicated that "the crew performed all the procedures provided by the manufacturer but was not able to control the aircraft."

257. In response, after the close of trading on Friday, April 5, 2019, Boeing issued a statement from Defendant Muilenburg entitled: "We Own Safety – 737 MAX Software, Production and Process Update." In the statement, Muilenburg informed the market that Boeing would be cutting production of 737 MAXs from 52 per month to 42 per month beginning in mid-April, as well as forming a committee to review Boeing's airplane development and design procedures.

258. This cut partially revealed the toll the protracted groundings of the 737 MAX was having on the Company and suggested that the Company's fix to the plane's software systems would not be available as soon as Defendants had represented. Muilenburg stated, in relevant part:

> We now know that the recent Lion Air Flight 610 and Ethiopian Airlines Flight 302 accidents were caused by a chain of events, with a ***common chain link*** being erroneous activation of the aircraft's MCAS function. ***We have the responsibility to eliminate this risk, and we know how to do it***. As part of this effort, we're making progress on the 737 MAX software update that will prevent accidents like these from ever happening again. . .
>
> ***We're also finalizing new pilot training courses and supplementary educational material*** for our global MAX customers . . .
>
> * * *
>
> Safety is our responsibility, and we own it. When the MAX returns to the skies, we've promised our airline customers and their passengers and crews that it will be ***as safe as any airplane ever to fly***.

259. Analysts reacted negatively to Boeing's planned slowdown in production for the 737 MAX. In an April 8, 2019 report, Bank of America ("BofA") analysts downgraded Boeing from Buy to Neutral. They stated that the solution to Boeing's problems was "[n]ot just a simple software fix." The BofA analysts stated their concern that the production delay "likely means that the 737 delay could last longer than previously expected." The BofA analysts continued, "***Considering the operating risks in Boeing's business made apparent by recent events regarding the 737 MAX***, we expect Boeing to trade at its historical 25% discount to the S&P 500 on a Price to Free Cash Flow Basis instead of closer to parity." The BofA analysts added, "The reputational loss [to Boeing] from these [crashes] could erode long-term market share and pricing power of the 737 MAX."

260. In response to Boeing's April 5, 2019 announcement, the price of Boeing stock plummeted 4.4%, from $391.93 per share on April 5 to $374.52 per share on April 8, on high trading volume. This drop erased $9.84 billion in shareholder value.

261. Despite this announcement, Defendants continued to mislead investors about the 737 MAX's return-to-service timeline and the prospects that the plane's problems would be corrected by a simple software fix. Defendants also continued to conceal how much they knew about the risks posed by the rushed production of the 737 MAX.

### E. June 2019 Paris Air Show: Unbeknownst To Investors, Then-Acting FAA Administrator Elwell Told Defendant Muilenburg To "Slow Down" Public Statements About The MAX's Return-To-Service Timeline

262. In an event that went undisclosed until the *Wall Street Journal* published the details on December 22, 2019, Defendant Muilenburg had a private meeting with then-Acting Administrator of the FAA, Daniel Elwell, on the sidelines of the Paris Air Show, which occurred June 17-23, 2019. As the *Wall Street Journal* later reported, Muilenburg and Elwell "met inside the back of a parked military plane" instead of Boeing's headquarters at the air show, thereby avoiding public scrutiny. During the meeting, Elwell told Muilenburg (and Boeing) "to slow down its talk of progress [on the 737 MAX] [to] giv[e] the FAA space to exercise scrutiny." According to the *Wall Street Journal* article, "FAA officials ***had grown impatient*** with Boeing's optimism about putting the MAX back in service." According to people familiar with the meeting, as reported in the *Wall Street Journal*, Muilenburg told Elwell, "You're right. ***We're not going to push***."

263. Notwithstanding this conversation, just days later, on June 26, 2019, Muilenburg announced at the Aspen Ideas Festival that Boeing was ***"still . . . looking at" the end of summer 2019 (or one-two months in the future) as the "timeframe" for the 737 MAX returning to operation***. This statement minimized the problems facing Boeing and reassured the market that the issues with the MAX were soon be resolved.

### F. June 26, 2019: The FAA Announced It Discovered A Software Flaw During Testing

264. On June 26, 2019, after the close of the trading day, the FAA issued a statement on Twitter regarding a "potential risk that Boeing must mitigate" related to the 737 MAX's software before the FAA would certify the MAX to fly again. Boeing responded with the following official statement:

> ***The safety of our airplanes is Boeing's highest priority***. During the FAA's review of the 737 MAX software update and recent simulator sessions, the [FAA] identified ***an additional requirement*** that it has asked the company to address through the software changes that the company has been developing for the past eight months. The FAA review and process for returning the 737 MAX to passenger service are designed to result in a thorough and comprehensive assessment. Boeing agrees with the FAA's decision and request, and is working on the required software. Addressing this condition will reduce pilot workload by accounting for a ***potential source of uncommanded stabilizer motion***. Boeing will not offer the 737 MAX for certification by the FAA until we have satisfied all requirements for certification of the MAX and its safe return to service.

Boeing published this statement on its website and filed a Form 8-K with the SEC on June 26, 2019, stating, "The Boeing Company agrees with the FAA's decision and request, and is working on the required software to address the FAA's request. Boeing will not offer the 737 MAX for certification by the FAA until we have satisfied all requirements for certification of the MAX and its safe return to service."

265. In a June 26, 2019 article following the statements from the FAA and Boeing, the *Wall Street Journal* reported that the software system in question "***is related to an emergency procedure that can be used to address MCAS malfunctions***." On the same day, *CNN* wrote, "In simulator tests [of the MCAS software fix], government pilots discovered that a microprocessor failure could push the nose of the plane down toward the ground." According to a *CNN* source, "it was difficult for the test pilots to recover in a matter of seconds [after the failure of the microprocessor] . . . that's ***an unreasonable risk***." Similarly, on June 26, 2019, the *Associated*

*Press* reported that the "setback could delay the plane's return to service by an extra one to three months."

266. Analysts reacted negatively to these disclosures. On June 27, 2019, analysts from Canaccord Genuity wrote, "What was initially hoped to be a ***simple MCAS software fix*** that would not involve significant engineering labor on the existing MAX fleet ***now appears to be more complicated***." Similarly, in a June 27, 2019 note, analysts at Jefferies wrote of the software upgrades the FAA requested after testing MCAS: "The timing and extent of the change is unknown."

267. In response to the revelation that the FAA had asked Boeing to address another software fix after discovering the flaw during MCAS testing and the further delay this would cause for the plane's return to service, the price of Boeing stock fell 2.9%, from $374.94 per share on June 26, 2018, to $364.02 per share on June 27, 2019, on high trading volume – causing a $6.14 billion market capitalization drop.

268. On July 18, 2019, Boeing issued a press release stating that it "continues to work with civil aviation authorities to ensure that 737 MAX's safe return to service," and – notwithstanding Muilenburg's discussion with Acting FAA Administrator Elwell the month before – "***has assumed that regulatory approval of 737 MAX return to service in the U.S. and other jurisdictions begins early in the fourth quarter 2019***." Investors believed the Company, with Cowen & Co., for example, stating that it "assume[d] ***BA's timing comments are based on its extensive interactions with regulators***."

### G. July 24, 2019: Boeing Disclosed The Possibility That 737 MAX Production Could Be Halted

269. On July 24, 2019, Boeing held its earnings call for the second quarter of 2019 and disclosed for the first time that it might entirely ***halt production of the 737 MAX*** if the grounding

continued. At the beginning of the investor call, Defendant Muilenburg raised, for the first time, the specter that a longer return-to-service timeline than Boeing had been publicly representing could in turn lead Boeing to halt production of the 737 MAX altogether. Specifically, Muilenburg said, "As our efforts to support the 737 MAX's safe return to service continue, we will continue to assess our production plans. Should our estimate of the anticipated return to service change, we might need to consider possible further rate reductions or other options, including a temporary shutdown of the MAX production." Defendant Smith also touched upon the prospect of a 737 MAX production shutdown, a first for the Company, stating: "We will continue to assess our current production plans and incorporate any new insights such as return-to-service time line, storage capacity and supply chain in our analysis to help inform us on whether further rate reduction or other options, ***including a temporary shutdown of the MAX production***, are needed."

270. These disclosures partially revealed to the market that, contrary to Defendants' repeated assertions that the 737 MAX would soon return to service, the grounding may be extended further, and that Boeing was considering suspending MAX production, which would cause the Company to incur massive expenses until the planes were re-certified and production resumed.

271. Analysts were surprised following Boeing's July 24, 2019 earnings call and reacted negatively. In a July 24, 2019 report, Canaccord Genuity analysts wrote that the announcement reflected "737 MAX pressure" and that "[t]here is clearly still some timing risk around the [return to service] for the MAX, and [Boeing] management struck a more cautious tone." Similarly, Morgan Stanley wrote on the same day: "We're still not in the clear on the 737 MAX and there remains a wide-range of outcomes."

272. In spite of the announcement of a potential suspension of production, Defendants continued to conceal the complete truth about the known safety risks of the 737 MAX – which

were well known to Defendants from at least the beginning of the Class Period. On the July 24, 2019 earnings call, Muilenburg stated that Defendants were working with regulators to "ensure the 737 MAX's safe return to service" without revealing that Defendants knew what caused the two crashes and that the magnitude of the MAX's safety failings would continue to prevent the MAX from returning to service. Defendants' continued concealment of the whole truth continued to keep Boeing's stock price artificially high.

273. After the market closed on July 24, 2019, *The New York Times* published an article quoting aviation industry experts' analysis of Boeing's announcement. Scott Hamilton, a managing director of Leeham Company, stated that the repeated discussion of the shutdown during the investor call was significant: "The fact that they talked about it for the first time is significant. . . . ***When Boeing starts talking about a topic and repeating it***, especially in the same event, they're signaling that something is going on."

274. In response to the Company's July 24, 2019 disclosure, Boeing stock declined nearly 7%, falling from $373.07 per share on July 23 to $361.43 per share on July 24, 2019, then continuing to fall to close at $348.09 per share on July 25, 2019, on high volume. In total, over the two-day trading period following Boeing's second-quarter earnings call on July 24, 2019 when the Company announced that a complete shutdown of the 737 MAX production line was possible, Boeing's stock price plummeted $24.98 per share, erasing $14.06 billion of Boeing's market capitalization.

### H. August 2019: The FAA And Representatives From Aviation Regulators In Europe, Brazil, And Canada Traveled To Seattle to Meet With Boeing Officials

275. In August 2019, Defendant Muilenburg further damaged the increasingly frayed relationship between Boeing and the FAA. As later reported by *The New York Times* in a December 22, 2019 article, in August 2019, the FAA and regulators from Europe, Canada, and

Brazil travelled to Boeing's Seattle offices "expecting to review reams of documentation describing the software update for the Max." Instead, according to the report, "the Boeing representatives offered a brief PowerPoint presentation, in line with what they had done in the past." The head of the FAA's certification office, Earl Lawrence, summed up the meeting, and regulators' disappointment with the presentation, saying, "We were looking for a lot more rigor in the presentation of the materials. They were not ready."

### I. October 11, 2019: Defendant Muilenburg Stripped Of Role As Chairman Of The Board

276. On October 11, 2019, in a press release, Boeing issued a press release announcing that it was splitting the role of Chairman and CEO. Defendant Muilenburg would serve as CEO to "focus full time on running the company as it works to return the 737 MAX safely to service." Then-lead independent director David L. Calhoun was tapped to serve as non-executive Chairman.

### J. October 18 and 21, 2019: *The New York Times* Published A Series Of 2016 Text Messages Between 737 MAX Test Pilots Revealing That Defendants Hid MCAS Problems From Regulators

277. On October 18, 2019, in an article titled "Boeing Pilot Complained of 'Egregious' Issue with 737 Max in 2016," *The New York Times* published the series of text messages detailed above at Paragraphs 116-121 showing that ***in 2016 Boeing and top officials at the Company knew MCAS was making the 737 MAX difficult to control in flight simulators***. The transcript had been given to lawmakers the night before and to the DOJ months before, as part of a production from Boeing to the DOJ during a criminal investigation. The House Transportation Committee released the documents, which included damning admissions by key Boeing employees that Defendants improperly manipulated the MAX certification process and misled the FAA. In a September 20, 2016 conversation between Patrik Gustavsson of the MCAS testing unit and one of his colleagues, the Boeing employees exclaimed "oh sweet jesus . . . this is a joke . . . this airplane

is ridiculous," asked "what havent they told us yet??? Whats next?," complained that "We are having issues with every update we do" and "it seems like they'll never get it right[-] fix one thing, break three others," and wrote "OMG!!!! What the hell," and "This is just ridicoulus [sic] . . . no one wants to fix anything."

278. Likewise, as discussed above, "top Boeing pilot" Mark Forkner described to Gustavsson his difficulty in using MCAS. As *The New York Times* reported, "Mr. Forkner was the chief technical pilot for the Max and was in charge of communicating with the F.A.A. group that determined how pilots would be trained before flying it. ***He helped Boeing convince international regulators that the Max was safe to fly***." Forkner's and Gustavsson's exchanges were incredibly damning, including that "***MCAS was running rampant in the sim***."

279. In connection with the publication of the transcript, *The New York Times* noted, "***The existence of the messages strike at Boeing's defense that it had done nothing wrong regarding the Max*** because regulators had cleared the plane to fly, and potentially increases the company's legal exposure as it faces civil and criminal investigations and multiple lawsuits related to both crashes." Jon Weaks, president of the Southwest Airlines Pilots Association, said in a statement on October 18, 2019 "This is more evidence that Boeing misled pilots, government regulators and other aviation experts about the safety of the 737 Max."

280. Lawmakers reacted harshly to learning that Defendants had misrepresented and concealed important information about the MAX's and MCAS's operations and safety. "***This is the smoking gun***," Representative Peter DeFazio, Democrat of Oregon and chairman of the House Transportation and Infrastructure Committee, said in an interview, as reported by *The New York Times*, "This is no longer just a regulatory failure and a culture failure. It's starting to look like criminal misconduct." Senator Richard Blumenthal, Democrat of Connecticut, said he expected

answers from Boeing's chief executive and board of directors: "They must be held accountable if Boeing was deceptive or misleading in failing to report safety concerns . . . What these reports indicate is that Boeing's own employees lied and concealed the truth."

281. Also, on October 18, 2019, Administrator of the FAA, Stephen Dickson, wrote a letter to then-CEO of Boeing Defendant Muilenburg, expressing alarm and dismay at the content of the text messages. The brief letter stated:

> Dear Mr. Muilenburg:
>
> Last night, I reviewed a concerning document that Boeing provided late yesterday to the Department of Transportation. I understand that Boeing discovered the document in its files months ago. I expect your explanation immediately regarding the content of this document and Boeing's delay in disclosing the document to its safety regulator.

282. According to the *Wall Street Journal*, FAA Administrator Dickson called Defendant Muilenburg after the House committee released the Forkner messages and said that Defendants' withholding of the documents for as long as they did "would effectively invite stricter regulation." The report cited people familiar with the conversation who said FAA Administrator Dickson told Muilenburg, "You're forcing my hand."

283. Analysts at J.P. Morgan reacted negatively to the revelation of Forkner's messages, which Boeing had concealed from the FAA for months, and the impact these incendiary messages would have on the 737 MAX's return to service and Boeing's credibility with the FAA. In a report published on October 18, 2019, J.P. Morgan analysts wrote:

> From a stock perspective, we believe one key issue around the news of Boeing's disclosure to the FAA of internal messages highlighting MCAS problems and indicating that an employee misled the Agency is the impact on the 737 MAX return to service timeline. From a technical perspective, the revelation need not affect the timing but, in our view, there is a political / public relations aspect of returning the MAX – Boeing, regulators, and carriers have to sell the technical and cultural changes credibly – and ***while the impact is difficult to quantify, the news is negative.*** Another important issue is Boeing management, with the House Transportation and Infrastructure Chairman already calling for a new CEO and

> other changes at Boeing as a result of today's news. We have no immediate conclusions here but will watch developments carefully and would note that ***as a leading defense contractor and the country's top manufacturing exporter, we think opinions of Boeing within the broader US government do matter.***

284. Over the following days – a weekend – multiple press reports highlighted that the messages showed Boeing knew about the MCAS problems well before a single 737 MAX entered service. On October 18, 2019, *The International Business Times – U.S. ed.* published an article titled, "Texts Reveal ***Boeing Knew*** About System Errors With The 737 MAX in 2016." That same day, the *Washington Post* ran a story titled "Messages show ***Boeing*** [ ] ***knew*** in 2016 of problems that turned deadly on the 737 Max," which included a passage that reads, "Instant messages between two high-level Boeing employees in 2016 ***indicate the company was aware of major problems with an automated feature on the 737 Max jet*** that has been implicated in two deadly crashes."

285. Additional press reports followed, stating that the text messages released the previous Friday showed Boeing knew about the MCAS issues. On October 20, 2019, *The Daily Telegraph* published a story titled, "Boeing's Board in Emergency Meetings as 737 MAX Crisis Deepens" noting that senior Boeing executives and the board of directors were beginning a second day of emergency meetings in Texas following release of the text messages.

286. On October 20, 2019, analysts reacted negatively to the text messages by downgrading their rating for Boeing stock. First, in a report titled "Downgrade to Neutral: New disclosures alter our view," UBS wrote:

> ***The most recent disclosure of new internal communications by Boeing to the FAA could well warrant a relook by the FAA at other information provided by the manufacturer.*** We are less concerned with the safety of the 737 MAX following an intensive relook at the overall certification process, but the reality that certification is partially subjective gives us pause to our prior assessment.

* * *

> The recent revelation of texts and emails from pilots in the test program has introduced an "AND" qualifier into our view on Boeing's potential corporate responsibility. While we still see a set of poor technical assumptions as being at the core, those are now coupled with reported instances of potential regulatory incomplete disclosure. ***It's impossible for us to understand the extent (or intent) of any potential under-reporting of data to the FAA, but poor technical assumptions now have to be combined with a view that there could be evidence to support a perception of and potential action of incomplete disclosure (whose disclosure could have resulted in a higher hurdle for the underlying poor hazard assessment to clear).***
>
> * * *
>
> Further, the public, tersely worded letter [on October 18] from the FAA Administrator to the CEO of Boeing is a ***clear sign that these new disclosures likely hit a nerve at the regulator*** and have to be viewed as incremental to the 737 MAX return to service. From a process standpoint, the FAA has been a firm defender in open forums of the overall MAX certification process (to congress, to customers and to global regulators). ***Following the recent revelation of texts and emails from a former test pilot, Boeing may have isolated itself in the last throes of potentially returning the 737 MAX to service.***

287. Similarly, Credit Suisse released an analyst report on October 20, 2019 downgrading Boeing stock. Credit Suisse wrote, "[We] can no longer defend the [Boeing] shares in light of the latest discoveries [ ], which significantly increase the risk profile for investors." Credit Suisse further noted that the 737 MAX's return to service "could be obstructed as ***the messages may shatter the fragile trust***" between aviation regulators and Boeing.

288. Also on October 20, 2019, the *Wall Street Journal* reported that a three-year-old survey (which was only then being disclosed publicly) showed how management pressure on engineers and pilots in the commercial airlines unit at Boeing may have compromised safety. The story reported that investigators for the U.S. House of Representatives Transportation and Infrastructure Committee, while investigating the design and certification of the 737 MAX, received details of a 2016 internal Boeing survey showing "roughly one in three employees who responded felt 'potential undue pressure' from managers regarding safety-related approvals by federal regulators across an array of commercial planes." The article noted, "Such conflicts could

become problematic, the survey found, when it came to Boeing engineers who played dual roles designing certain systems on behalf of the plane maker and then certifying the same systems as safe on behalf of the Federal Aviation Administration, as part of a decades-old agency program that effectively outsources such regulatory work to company employees." The survey coincided with the time period during which the text messages discussed above were exchanged relating to problems with MCAS.

289. On Monday, October 21, 2019, the price of Boeing shares continued to slide following the new revelations. That same day, analysts issued downgrades of Boeing stock.

290. Following the October 18, 2019 reports, Boeing stock fell 6.79%, down $25.06 per share on October 18, 2019, erasing $14.1 billion of Boeing's market capitalization. The market continued to react on October 21, 2019, including with at least two analyst downgrades. Boeing stock fell 3.76%, down $12.94 per share on October 21, 2019, erasing $7.28 billion of Boeing's market capitalization. ***The two-day drop caused by revelation of the Forkner messages resulted in a total loss of $21.38 billion from Boeing's market capitalization.***

### K. October 29-30, 2019: Defendants Were Rebuked By Congress For Telling The Public "Half-Truths" About The MAX's Safety And Withholding The Forkner Emails From Congress

291. As discussed above, on October 29, 2019, Defendant Muilenburg testified before the Senate Commerce, Science, and Transportation Committee in a hearing titled "Aviation Safety and the Future of Boeing's 737 MAX," alongside John Hamilton, Vice President and Chief Engineer for BCA. The two also testified the next day before the House Transportation and Infrastructure Committee. Legislators lambasted Muilenburg and Boeing for lying to the public about the safety of the 737 MAX. Lawmakers and other industry experts issued scathing rebukes to Defendants. In those hearings, Defendant Muilenburg was excoriated for misleading the public and regulators about the MAX's safety, including Boeing's decision to omit MCAS from the 737

MAX flight manual, Boeing's misrepresentations about the Disagree Alert, and Boeing's reassuring statements about MCAS's safety in the wake of the Lion Air Crash.

292. For example, at the October 29, 2019 Senate hearing, Senator Ted Cruz upbraided Muilenburg, pointing out that Muilenburg either knew, or was reckless in failing to know, that the MAX was unsafe well before the Ethiopian Airlines Crash, because the damning Forkner messages had been reviewed by Boeing before they were produced to the DOJ in February 2019:

> ***You're the CEO, the buck stops with you.*** Did you read this document and how ***did your team not put it in front of you, run in with their hair on fire saying we've got a real problem here?*** How did that not happen and what does that say about the culture at Boeing if they didn't give it to you and you didn't read it and if you didn't say I want to read and see what happens? . . .
>
> ***How - how did you not, in February, set out a nine alarm fire to say we need to figure out exactly what happened,*** not after all the hearings, not after the pressure, but because 346 people have died and we don't want another person to die?

293. During the course of the Senate hearing, Muilenburg admitted that, as Boeing's own personnel had warned since at least 2014, the Company should not have designed MCAS to be vulnerable to a single AoA malfunction. Muilenburg testified, "There are some things we could improve. One of them is [ ] going to a dual sensor feed instead of single as well as limiting MCAS to a single action or activation during a flight." Moreover, senators rebuked Defendants for the decision not to include MCAS in the 737 MAX FCOM or provide training to pilots so they could safely respond to the MCAS failures.

294. In the Senate hearing, Senator Amy Klobuchar forcefully made the point that it is not "acceptable to have pilots flying planes without knowing about these key automated flight systems," with Senator Richard Blumenthal characterizing Boeing's decision not to describe MCAS in the FCOM as a "Boeing policy" to "***turn those planes into flying coffins***."

295. Senator Tammy Duckworth, a former U.S. Army helicopter pilot, and the junior senator from Boeing's home state, criticized Boeing for failing to tell "the whole truth" about

MCAS, including to airline customers, despite knowing that the system could erroneously take over the entire aircraft and would be difficult for pilots to counteract. Speaking directly to Defendant Muilenburg, Senator Duckworth said, "[Y]ou put an MCAS system into an aircraft, you didn't tell the pilots that this MCAS system was in there." She said, "[T]he pilots did exactly what they were supposed to do, but five seconds later, especially if that sensor is still stuck, it overrides what the pilot does and it pushes the nose right back down again – three seconds. A pilot's best friend is time and altitude. And on take-off, there is no altitude. And he's got no time. You set those pilots up for failure." Senator Duckworth accused Boeing of withholding information about how MCAS overruled pilots for years, declaring, "***You knew [MCAS created issues] in 2016. You knew in 2016 that this was happening***. And your team at Boeing decided we didn't need to fix that because of "'well-understood piloting techniques and procedures.'" Senator Duckworth concluded her statement by saying, "***You have not told us the whole truth*** and these families [of crash victims] are suffering because of it."

296. Like the senators at the previous day's hearing, House members criticized Boeing. The committee members did not accept Muilenburg's repeated platitude that "[t]he only sustainable business model for Boeing is safety," with Representative Jesus Garcia stating, "***It is pretty clear there has been a culture of greed and compromising safety at Boeing***."

297. In addition, Representative Colin Allred said, "[I]t's the purposeful concealment that bothers so many of us, with an ***obvious financial drive behind it***." Representative John Garamendi similarly told Muilenburg, "You are driving profit, you are not driving quality, and you sure as heck not driving safety." Representative Greg Stanton blasted Muilenburg for "the top brass at Boeing too often put[ting] . . . ***profit before people's lives***." And Representative

Debbie Mucarsel-Powell declared, "[T]his is a story about a company cutting corners, taking shortcuts, ***sacrificing safety to achieve maximum profits***."

298. Boeing did not issue any formal statements following Muilenburg's appearance before either Congressional committee.

### L. Early November 2019: Defendants Placed Undue Pressure On The FAA To Improperly Accelerate The MAX Certification Timeline

299. According to *The New York Times*, Defendant Muilenburg was still, in early November 2019, pressing the FAA on the 737 MAX's return-to-service timeline. He did so despite several prior warnings from the regulator, including (a) Elwell's instruction at the June 2019 Paris Air Show for Boeing to stop publicly representing any return-to-service timeline, (b) Defendants' failed August meeting with regulators, and (c) the opprobrium from FAA Administrator Dickson after the Forkner messages were released in October. Undeterred, as reported by *The New York Times*, in November 2019, Muilenburg called FAA Administrator Dickson "to ask whether he would consider allowing the company to begin delivering airplanes before they were cleared to fly." An FAA spokesman told *The New York Times* that FAA Administrator Dickson responded that he "would look into it but made no commitments" – in other words, Dickson refused to give Muilenburg the concessions he was requesting.

300. Then, without any further information or response from the FAA or Administrator Dickson, Boeing issued a "737 MAX Progress Report" on Monday, November 11, 2019, which included a statement that Boeing may secure re-certification of the MAX and deliver planes to customers as soon as the ***next month***:

> Boeing continues to target FAA certification of the MAX flight control software updates during this quarter. ***Based on this schedule, it is possible that the resumption of MAX deliveries to airline customers could begin in December***, after certification, when the FAA issues an Airworthiness Directive rescinding the grounding order.

FAA Administrator Dickson, frustrated, told colleagues that he never agreed to the December timeline, as Boeing's press release suggested, and that he "felt as though he was being manipulated" by Muilenburg.

### M. December 12, 2019: FAA Administrator Informed Defendant Muilenburg 737 MAX Would Not Be Clear To Fly Until 2020

301. Boeing's November 11 public announcement was a bridge too far for the FAA. As *The New York Times* later discussed in a December 22, 2019 article titled "At Boeing, C.E.O.'s Stumbles Deepen a Crisis," on December 12, 2019, the FAA held a "tense, private" meeting with Muilenburg in Washington, D.C. During the meeting, according to *The New York Times*, "***the head of the Federal Aviation Administration reprimanded Boeing's chief executive for putting pressure on the agency*** to move faster in approving the return of the company's 737 Max jet." Similarly, *USA Today* reported that at the meeting, "FAA Administrator Steve Dickson ***chastised Muilenburg for suggesting the plane would be recertified [in 2019]***." The *Seattle Times* published an article on the same day of the meeting, titled, "As the 737 MAX's return slips out to mid-February, ***FAA boss tells Boeing CEO to back off predictions***," and characterized the meeting as a "starkly direct rebuke to Boeing." In a subsequent article, *the Seattle Times* wrote that "Dickson delivered ***an unusually blunt dressing down*** to Muilenburg in person." Following the December 12, 2019 meeting, according to the *Seattle Times* and other outlets, the FAA then made its warning to Muilenburg public by explaining in a note to Congress:

> ***Boeing continues to pursue a return-to-service schedule that is not realistic*** due to delays that have accumulated for a variety of reasons . . . More concerning, the Administrator wants to directly address the perception that some of Boeing's statements have been ***designed to force the FAA into taking quicker action***.

The *Seattle Times* described FAA Administrator Dickson's note as "an extraordinary rebuke."

### N. December 16, 2019: Boeing Announced 737 MAX Production Would Be Halted Entirely, Revealing The Depth of The Issues Surrounding The Troubled Plane

302. After trading hours on December 16, 2019, Boeing issued a press release announcing that it was suspending production of the 737 MAX. Noting that Boeing had approximately 400 737 MAX planes in storage, the Company announced, "[W]e have decided to prioritize the delivery of stored aircraft and ***temporarily suspend production on the 737 program beginning [in January 2020]***."

303. Analysts reacted negatively to Boeing's announcement of a production halt for the 737 MAX with no clear timeline for its duration. On December 16, 2019, analysts at Jefferies wrote that the "Halt to Production with No Timeline Creates Timing Abyss." Similarly, on the same day, UBS analysts wrote about the production shutdown, saying, "Compounding the lack of certainty on the schedule is the approaching high season for airlines after which their urgent need for aircraft delivery fades."

304. Based on the continued analysis of the December 16, 2019 disclosures and Boeing's announcement that 737 MAX production would be halted for an undefined amount of time, Boeing's stock price fell 4.3%, down $14.67 per share on December 16, 2019, to close at $327.00 per share. The single day drop erased $8.26 billion of Boeing's market capitalization.

305. In all, disclosures related to the magnitude of the safety failings inherent in the design and manufacture of the 737 MAX caused an enormous destruction of Boeing shareholder value. As a result of the disclosure of the truth of Defendants' fraud, Boeing common shares declined from a Class Period high of approximately $446.01 per share to a closing price of $327.00 on December 17, 2019, a decline of nearly 27%.

## VI. POST-CLASS PERIOD DEVELOPMENTS

### A. Defendant Muilenburg And Counselor To The Board J. Michael Luttig Abruptly Departed the Company

306. On December 22, 2019, a week after Boeing announced that it was halting production of the 737 MAX without any timetable for a return to service, the Boeing Board fired Defendant Muilenburg. The Board's move came two months after it had stripped Muilenburg of his Chairman role and as the deterioration of Boeing's relationship with the FAA continued apace.

307. As discussed above, Muilenburg's and Boeing's ongoing false and misleading statements regarding the 737 MAX's return-to-service timetable had flatly ignored the FAA's repeated private requests that the Company refrain from issuing any estimates.

308. News outlets published numerous reports attributing Muilenburg's departure to the 737 MAX crashes and Muilenburg's continued misrepresentations of Boeing's progress to get the planes back in the air. For instance, *CNBC* wrote, "***What did Muilenburg in was repeated claims that regulators would return the plane to service in the fourth quarter and a dressing down in Washington by FAA administrator Steve Dickson***."

309. Three days after Muilenburg's firing, on December 26, 2019, Boeing announced the departure of J. Michael Luttig, who served as the Company's General Counsel from 2006 until being named Counselor and Senior Advisor to the Board in May 2019, and with whom whistleblower Pierson had discussed his concerns. When Boeing announced Luttig's role as Counselor and Senior Advisor to the Board, the Company stated that Luttig would "manage all legal matters associated with the Lion Air Flight 610 and Ethiopian Airlines Flight 302 accidents." Discussing Luttig's departure, the *Wall Street Journal* noted that Luttig was a "close adviser to ousted CEO Dennis Muilenburg." On December 29, 2019, *Bloomberg* reported that "Luttig's

departure adds to the management turmoil at Boeing as the nine-month grounding of the [737 MAX] drags on."

310. Following Muilenburg's ouster, Defendant Smith served as interim CEO until former Chairman of the Board David Calhoun assumed the role of CEO on January 13, 2020.

### B. Boeing Finally Publicly Endorsed MCAS Simulator Training For 737 MAX Pilots

311. As discussed above in Paragraphs 52-62, Boeing's fraudulent scheme grew in part out of its insistence that the 737 MAX could be certified under the old 737 type certificate, and that no MAX-specific simulator training was necessary for pilots. In a January 7, 2020 press release, Boeing admitted what it had long fought to deny – that simulator training was necessary. In an article that day titled "In Reversal, Boeing Recommends 737 Max Simulator Training for Pilots," *The New York Times* reported that, although the MAX was purportedly "designed to save airlines the expense of training their pilots on flight simulators" and even "after two crashes killed 346 people last year, Boeing argued in conversations with the Federal Aviation Administration that simulator training was not necessary." The article continued:

> Now, after a worldwide grounding has cost the company billions of dollars over nearly 10 months and caused it to temporarily halt the production of the Max, Boeing has reversed course. On Tuesday, the company said it would recommend that pilots train in flight simulators before flying the Max.
>
> The F.A.A. said it would consider Boeing's recommendation, adding in a statement that it was "following ***a thorough process, not a set timeline, to ensure that any design modifications to the 737 Max are integrated with appropriate training and procedures***." . . .
>
> Simulator training will add another issue for many airlines, which have struggled with mounting losses throughout the Max crisis. ***It could delay the return of the Max even after regulatory approval. It will make it more difficult for airlines to schedule pilots and planes. And they may need to buy new, multimillion-dollar simulators*** to train pilots who are not already flying the 737 NG, the predecessor to the Max. . . .

"***This erodes one of the key selling points of the Max in the first place***," Jonathan Raviv, an analyst for Citi, said in a research note.

### C. Boeing Released Further Astonishing Internal Messages Highlighting the Company's Cavalier Attitude Regarding the Safety of the 737 MAX

312. On January 9, 2020, Boeing released to Congress a new set of astonishing internal messages in which Boeing employees mocked the FAA and openly discussed concerns with the safety of the 737 MAX. In a January 9, 2020 report, *The New York Times* published a number of the most disturbing messages. For instance, regarding the FAA, in a 2018 text message, one employee wrote, "I still ***haven't been forgiven by God*** for the covering up [from the FAA] I did last year." Describing FAA officials watching a presentation from Boeing in a text message from 2015, a Boeing employee implied the complexity of the presentation was out of the FAA officials' reach, saying, "***[I]t was like dogs watching TV***." In a text message conversation from 2017, a Boeing employee complained, "who cares when you're exhausted . . . I'm friggin delirious dude . . . between this [flight management computer] crap, the [redacted] issue, and everything else I'm spent." The employee then stated that the "737 group" needed "some time off," and "the rest of the slackers can pick up our work!," before writing of the 737 MAX, "This airplane is ***designed by clowns***, who are in turn ***supervised by monkeys***." Finally, in a pre-Lion Air Crash 2018 email questioning the 737 MAX's safety, an employee asked a colleague, "***Would you put your family on a Max simulator trained aircraft? I wouldn't***." The recipient replied, "***No***."

313. Among these messages were redacted chats from June 5, 2017 in which two employees discussed Lion Air's request for more training on the 737 MAX, as reported by *Bloomberg* on January 13, 2020. A Boeing employee wrote, "Now friggin Lion Air might need a sim to fly the MAX, and maybe because of their own stupidity. I'm scrambling figure out how to unscrew this now! idiots [sic]." A second employee responded, "WHAT THE F%$&!!!!!"

### D. Boeing Announced Its First Annual Loss Since 1997 And Disclosed An SEC Investigation Related To The 737 MAX Crashes And The Company's Disclosures Related To The Planes' Safety

314. On January 29, 2020, Boeing announced its first annual net loss since 1997. Boeing disclosed that the 737 MAX-related delays and grounding costs had exceeded $18 billion and the Company's revenues had plummeted to $17.11 billion, a 39.7% drop from 2018. This followed news that Boeing had more cancellations than orders for its planes in 2019, making its tally for the year a negative 87, according to a January 14, 2020 *UPI* article. The article reported, "Since the groundings in [March 2019], there's been little demand for the 737, which saw a 90 percent drop in new orders in 2019."

315. Two days later, on January 31, 2020, in its Form 10-K filed with the SEC, Boeing informed investors for the first time that the SEC was investigating its disclosures connected to the 737 MAX. Providing no details regarding the SEC investigation, Boeing's disclosure stated, "We also are fully cooperating with U.S. government investigations related to the [Lion Air and Ethiopian Airlines] accidents and the 737 MAX, including investigations by the U.S. Department of Justice and the Securities and Exchange Commission."

## VII. ADDITIONAL ALLEGATIONS OF DEFENDANTS' SCIENTER

316. The facts detailed above, when viewed holistically and together with the other allegations in this Complaint, establish a strong inference that each of the Defendants knew or were severely reckless in not knowing that each of the misrepresentations and omissions alleged herein would be, and were, misleading to investors at the time they were made.

317. At all relevant times, each of the Defendants knew or recklessly disregarded that their statements and omissions concerning the safety of the 737 MAX, and the Company's ability to fix the MAX's fundamental safety problems and return the planes to flight, were or would be

misleading to investors at the time they were made. In addition to the facts discussed above, Defendants' scienter is further evidenced by the following facts.

### A. Defendants Have Admitted That The 737 MAX Was Unsafe, Its Operating Manual Was Dangerously Incomplete, MCAS Was Fundamentally Flawed, And Boeing Lied To Regulators

318. Defendants have admitted that the 737 MAX was unsafe, its operating manual was dangerously incomplete, including because it did not discuss MCAS, MCAS was fundamentally flawed including because it relied on a single point of failure, and Boeing lied to regulators about the need for simulator training to fly the MAX safely. Those admissions strongly evidence Defendants' knowledge or, alternately, severe recklessness, when they made the materially false statements and omissions discussed below in Section VIII.

319. Defendant Muilenburg himself admitted in his October 30, 2019 testimony before Congress that Defendants' critically flawed decisions to include only a single point of failure when designing MCAS, and not to include MCAS in the 737 MAX operating manual, were not made by a small group of employees shielded from senior management, but rather by "large teams that work together across our company . . . broad integrated teams." Muilenburg further admitted that MCAS's flaws were not due to any rogue actor as there was "no one individual" that made the decisions at issue, that Boeing's senior management was "responsible for making sure that you adhere to your design requirements," and that Muilenburg was both "responsible" and "accountable" for MCAS's failures.

320. Also, in October 30, 2019 testimony to Congress, BCA Chief Engineer John Hamilton admitted that, within a week of the Lion Air Crash – i.e., by November 5, 2019 at the latest, days before the start of the Class Period – Boeing's senior executives knew that "MCAS activation" played a key role in the Lion Air Crash, that the 737 MAX was unsafe without making

necessary changes to the MCAS software, and that MCAS and the MAX "didn't quite follow the assumptions that [Boeing] base[d] the design on."

321. Defendants have also admitted that, although they represented to customers that the AoA Disagree Alert was a standard feature on the MAX, "the disagree alert was not operable on all airplanes because the feature was not activated as intended." Nevertheless, to avoid compromising Defendants' aggressive production and sales goals, Boeing admitted that it decided to wait three years, until 2020, to introduce new software to fix that dangerous defect – while also failing to inform the FAA that the MAX did not conform to the approved design. Further, as first reported in May 2019, Vice President of Product Development Mike Sinnett admitted that MCAS was "flight-critical software" – i.e., software that industry standards and regulations required to have more than a single point of failure. Sinnett further admitted that Boeing did not even know if "our [design] assumptions [were] really even valid." And in his October 30, 2019 testimony, BCA Chief Engineer Hamilton admitted that Boeing's assumption that pilots would be an adequate backup in the event of erroneous MCAS activation was "flawed."

322. Internal Boeing documents that became public only in late 2019 in connection with congressional and regulatory investigations include further admissions of Defendants' intentions to deceive. Those documents include multiple emails from 737 MAX Chief Technical Pilot Mark Forkner admitting that he "lied to the regulators" and "jedi mind-tricked" both regulators and airline customers into accepting Defendants' false reassurances that the 737 MAX did not require simulator training for its safe operation, and that MCAS could safely be excluded from the plane's operating manual.

### B. The 2015 FAA Settlement Agreement Required Boeing Senior Management's Direct Involvement In Safety, Design, And Compliance Issues

323. The fact that Boeing was subject to the FAA Settlement Agreement before and during the Class Period strongly supports an inference of Defendants' scienter. On December 18, 2015, Boeing entered into the FAA Settlement Agreement to resolve 13 pending investigations, most of which involved "failures of corrective action." Among other things, that agreement required the direct involvement of Boeing's "executive-level" management in several key areas of regulatory compliance, including "safety management" and the completeness of submissions to the FAA, as well as "assign[ing] each compliance matter to a manager-level employee for resolution and accountability" and audit team reporting directly to BCA's Vice President of Quality. The FAA's press release highlighted Boeing's agreement "to implement improvements in its design, planning, production and maintenance planning processes."

324. The FAA Settlement Agreement likewise stated that its purpose was to "increase the focus and prioritization of BCA managers on regulatory compliance," including by identifying "the BCA executive-level positions (Accountable Executives) whose duties include primary responsibility for implementation" of a new comprehensive "Regulatory Compliance Plan."

325. Among other things, the Regulatory Compliance Plan required "BCA to assign each compliance matter to a manager-level employee for resolution and accountability." The plan further required "review of the regulatory compliance performance of BCA managers." In addition, the plan required BCA to enhance its internal audit reporting of regulatory compliance, including an internal audit team reporting directly to BCA's Vice President of Quality. Moreover, BCA was required to provide "Annual Comprehensive Report[s] on BCA's regulatory compliance and performance" to BCA's CEO and the FAA by January 15 of the years 2017, 2018, 2019, and 2020.

326. In its December 22, 2015 press release, the FAA quoted then-Administrator Michael Huerta as stating that the settlement would heighten Boeing's accountability for the design and production of its aircraft. Huerta stated in the press release, "Compliance requires all certificate holders to develop and implement internal controls that ensure they're operating according to the highest standards. Boeing has agreed to implement improvements in its design, planning, production and maintenance planning processes."

327. Accordingly, pursuant to the FAA Settlement Agreement, Boeing's profound safety failures in the development and production of the MAX – failures motivated by the Company's efforts to rush the plane to market under the 737-type certificate – were reported to the highest levels of the BCA organization.

### C. Defendants Were Working On Fixes To The 737 MAX's Safety Problems From The Start Of The Class Period

328. Defendants' scienter is further evidenced by their work, from the beginning of the Class Period forward, to fix the 737 MAX's underlying safety failures, including the inadequate information in the MAX operating manual. Although Defendants had decided not to implement fixes to the plane's software until 2020 that would have made the AoA Disagree Alert standard and operational, Defendants knew that those fixes were necessary by August 2017 at the latest. But, as Chairman DeFazio discussed during the October 30, 2019 congressional hearing, "Boeing decided to delay the fix for three years until 2020, they didn't tell the FAA, they didn't tell the customers, and they didn't tell the pilots about this until the Lion Air Crash. That's inexplicable."

329. Moreover, within a week of the Lion Air Crash, Defendants understood that MCAS had numerous design flaws that made the planes fundamentally unsafe, and had begun work on software fixes that would (1) require that MCAS use two AoA sensor to trigger activation, rather than rely on a single point of failure; (2) install the AoA Disagree Alert that was supposed to be

standard from the start; (3) ensure that MCAS did not have continuous authority such that it would activate repeatedly for each AoA triggering event; and (4) impose an MCAS command limit allowing pilots to readily override MCAS and manually control the plane.

330. Defendants also recognized from the start of the Class Period that customers and pilots were not adequately informed about MCAS. On November 13, 2018, Boeing sent a letter to the FAA requesting permission to update the 737 MAX 8's flight manual to include MCAS, but said nothing to investors or to the pilots and passengers who continued to fly on the 737 MAX.

### D. Defendant Muilenburg Improperly "Put[] Pressure On The [FAA] To Move Faster"

331. Throughout the Class Period, Defendants repeatedly reassured investors that the 737 MAX would return to flight on an unduly aggressive timeline, which ostensibly was based on (1) Defendants knowing the full extent of the MAX's safety problems and how to timely fix those problems; (2) Boeing working closely with the FAA to address the plane's underlying safety failures; and (3) representations by the FAA to Defendants supporting that timeline.

332. As evidenced by the June, August, November, and December 2019 communications and meetings between representatives of the FAA and other regulators (including FAA Administrators Elwell and Dickson) and Defendant Muilenburg, however, Defendants knew or were severely reckless in not knowing that they were misleading investors regarding the extent of the MAX's safety problems and whether the FAA had provided any reasonable basis for the aggressive return-to-service timeline that Defendants told investors. As discussed above at Paragraphs 262-63, 275, and 299-301: (a) at the June 2019 Paris Air Show, Elwell told Muilenburg "to slow down talk of [Boeing's] progress [to] giv[e] the FAA space to exercise scrutiny," to which Muilenburg responded "You're right. We're not going to push[ ]"; (b) the FAA and regulators from Europe, Canada, and Brazil met with Muilenburg and others in August 2019 to discuss

progress on the MAX, but the Boeing representatives were "not ready"; (c) in November 2019, Muilenburg called FAA Administrator Dickson "to ask whether he would consider allowing the company to begin delivering airplanes before they were cleared to fly," and Dickson refused to give Muilenburg the concessions he was requesting; and (d) "[i]n a tense, private meeting [in mid-December 2019] in Washington, the head of the Federal Aviation Administration reprimanded Boeing's chief executive for putting pressure on the agency to move faster in approving the return of the company's 737 Max jet." And as CNBC reported after Boeing announced Muilenburg's termination, "[w]hat did Muilenburg in was repeated claims that regulators would return the plane to service in the fourth quarter and a dressing down in Washington by FAA administrator Steve Dickson."

### E. By Early In The Class Period At The Latest, Defendants Learned That Pilots Lacked Necessary Information To Safely Fly The 737 MAX

333. Defendants' November 2018 meetings with airlines and pilots further evidence scienter. Those meetings evidence that in the wake of the Lion Air Crash, Defendants knew the crash was caused by a faulty AoA sensor, that all MAX planes were not properly equipped with the AoA Disagree Alert as they should have been and were represented to be, and that the people most in need of complete, accurate information about the MAX's design and operations – the pilots themselves – lacked critical information necessary to fly the planes safely.

334. On November 25, 2018, Boeing's 737 MAX Chief Pilot Craig Bomben, Director of Transportation Policy John Moloney, and Vice President of Product Development Mike Sinnett met with the leadership of the Southwest Airlines Pilots Association, during which the pilots told Defendants that they were "mad as hell that Boeing didn't tell us" about MCAS and asked if there were "any more surprises."

335. In addition, on November 27, 2018, Bomben, Moloney, and Sinnett met with American Airlines pilots, which American's union safety chairman later called "a very frank discussion." Sinnett acknowledged that a functioning AoA Disagree Alert would have prevented the Lion Air Crash, telling the pilots that it "wouldn't have happened to you guys" because American's MAX planes had properly functional AoA Disagree Alerts, which "would have directed pilots to have the potential problem checked out on the ground." Like Southwest's pilots, American's pilots were furious that they "didn't even know the damn [MCAS] system was on the airplane," and told Defendants to update the MAX software, provide additional training, modify the plane's external sensors, and make changes to how MCAS is activated.

### F. Internal Whistleblower Edward Pierson Raised Concerns To Defendants About Production Issues Plaguing The Renton Facility "Months Before the First Crash"

336. Defendants also knew or were severely reckless in not knowing that they were misleading investors about the 737 MAX's safety because whistleblower Edward Pierson, a Senior Manager at Boeing's Renton, Washington 737 production facility, raised numerous alarms with Defendant Muilenburg and other senior executives concerning development and production issues plaguing the Renton facility. On December 11, 2019, Pierson testified to Congress that he "witnessed a factory in chaos and reported serious concerns about production quality to senior Boeing leadership months before the first crash," and "formally reported again before the second crash." As Pierson testified, by early 2018, safety and quality problems fomented as management was pushing production of 737s from 47 to 52 per month, with plans to go to a rate of 57 per month, prioritizing "production speed over quality." Pierson detailed those problems, which he raised to the Head of the 737 Program, Scott Campbell, in June 2018, four months before the Lion Air Crash, warning that Boeing was "imbedding safety hazard(s) into our airplanes" and that

Pierson was himself "hesitant about putting [his] family on a Boeing airplane." Pierson subsequently raised his concerns to Campbell in person in July 2018.

337. Pierson testified to Congress that, after the Lion Air Crash, he "immediately feared the chaotic factory conditions had contributed to this tragic loss of life." He reached out to Boeing's Communications Office to speak with employees supporting the accident investigation and, after a MAX aircraft was forced to make an emergency landing in December 2018, wrote a letter directly to Muilenburg on December 19, 2018, again raising widespread production issues at the Renton facility.

338. Although Muilenburg never responded to Pierson's letter, former General Counsel J. Michael Luttig and his Assistant General Counsel Padraic Fennelly contacted Pierson in early-January 2019. Pierson again raised his warnings about "employee fatigue and schedule pressure, aggressive leadership communication, mounting quality defects (including numerous functional test and Electrical Wiring Interconnect System problems), staffing constraints, process deviations, communication breakdowns, and other [issues]," and stressed that it was important to investigate the Renton facility. The following month, in February 2019, Pierson emailed Luttig and Fennelly, told them that "Boeing had misled the public about the state of 737 production," and emphasized that "the sheer volume of these issues highlights the considerable & unnecessary risk the company was (is still?) taking to meet ever increasing airplane production rates and delivery schedules," and that "production mistakes may have been made with this airplane and potentially others."

339. On February 19, 2019, after his warnings and concerns went unheeded, Pierson escalated his concerns to Boeing's Board in a letter that "detailed [his] internal reporting efforts and requested urgent action from the Board."

### G. By No Later Than February 2019, Defendant Muilenburg Knew About Forkner's Damning 2016 Text Messages Regarding MCAS Malfunctions

340. Before the Ethiopian Airlines Crash and by February 2019 at the latest, Defendants knew that MAX Chief Test Pilot Forkner had notified the Company's senior management that MCAS was making the MAX difficult to control in flight simulators. In February 2019, Boeing provided the Department of Justice with relevant documents concerning the 737 MAX, including Forkner's damning 2016 text messages highlighting how MCAS was malfunctioning in the MAX flight simulator, as it had in the Lion Air Crash and the prior day's Lion Air flight. Muilenburg had known about those texts since earlier that month at the latest, but he did nothing to either address the critical safety concerns that Forkner's messages raised or the public's belief, including based on Defendants' prior reassuring statements, that the 737 MAX was fundamentally safe to fly.

### H. 737 MAX Sales And Safety Are Critical To Boeing's Operations

341. In addition, Defendants' scienter is evidenced by the critical nature of the 737 MAX to Boeing – including its safety, certification, and sales. The Executive Defendants – the Company's Class Period CEO and CFO – can be assumed to know the truth about the facts Defendants mispresented and failed to disclose to investors, including critical facts about the MAX's safety.

342. There is no genuine question that Boeing's financial success and growth relied on 737 MAX sales. The business unit responsible for the MAX, BCA, represented approximately 60% of Boeing's revenues for each of the years 2016 through 2018. For the year ended December 31, 2018 – the last full year of MAX sales and orders before the planes were grounded – BCA generated more than $60.7 billion of the Company's $101.1 billion in reported revenues and $7.9 billion, or 66%, of approximately $12 billion in earnings from operations. The more than 5,000

orders Boeing received (from more than 80 airlines) for the MAX before the start of the Class Period were worth more than $600 billion, with the order backlog representing more than 75% of Boeing's total commercial aircraft backlog. Analysts estimated that the MAX would generate one-third of Company-wide revenues until 2024. Further, during the Company's January 2019 earnings call, Defendant Smith stated that Defendants "expect 737 MAX to account for approximately 90% of total 737 deliveries in 2019," and throughout the Class Period Boeing touted the MAX as its "bridge to the future" and "the fastest-selling airplane in Boeing history," which "will enable us to expand our network into new and existing markets more efficiently, which will help us achieve long-term growth."

343. In addition to the core significance of 737 MAX sales to Boeing's financial condition and operations, Defendant Muilenburg himself has admitted the critical nature of plane safety to the Company. On March 18, 2019, Boeing issued a public letter from Muilenburg, in which he stressed that "[s]afety is at the core of who we are at Boeing . . . . This overarching focus on safety spans and binds together our entire global aerospace industry and communities."

## I. Boeing Faced Massive Financial Exposure If Simulator Training Were Required For The 737 MAX

344. Defendants were highly motivated to conceal and misrepresent the differences between the 737 MAX and older 737 models, including MCAS. Disclosing those differences threatened heightened scrutiny from regulators, customers, pilots, and the public, and likely would have resulted in demands and requirements for simulator training from the FAA and airlines.

345. Boeing faced massive financial exposure if simulator training were required. As discussed above, Boeing had privately promised Southwest Airlines a $1 million per plane rebate if simulator training were required, for a total potential rebate of $280 million. Even for customers to which Boeing had not promised such rebates, the substantial costs of simulator training would

have been reflected in lower sales prices, payments by Boeing for the simulators and training, or otherwise a financial outlay by the Company to offset the increased training costs. The lengthy time delay in bringing the MAX to market – by Boeing's own estimate, an additional four years – also threatened substantial negative financial impact, including the delay in revenues from sales and decreased sales as customers purchased other plane models including Airbus's A320neo.

### J. Defendants Repeatedly Attempted To Cover Up Serious Misconduct

346. Moreover, Defendants' scienter is evidenced by their repeated attempts to cover up serious misconduct and hide key safety information from regulators and the public including, as discussed above:

- Boeing removed MCAS's g-force threshold, enabling MCAS to operate at any speed;
- Boeing expanded MCAS's authority to move the plane's tail on each MCAS activation from 0.6 degrees to 2.5 degrees, expanding MCAS's power to push the plane into a dive and enabling MCAS to push the MAX's nose down to the maximum amount in as few as two activations;
- Boeing manipulated the MCAS System Safety Analysis to justify the system relying on only one AoA sensor, rather than two, despite the catastrophic hazard that MCAS represented;
- The AoA Disagree Alert was not included as standard and operational on all MAX planes, as represented, and instead was sold as an add-on and not installed on the vast majority of MAX planes that were sold, delivered, and flown; and
- The information and training that Boeing provided to pilots omitted key information about MCAS and how to respond to an erroneous MCAS activation, and failed to satisfy applicable regulatory requirements.

347. Defendants concealed from government investigators and the public highly inculpatory internal documents, including text messages and e-mails in which Forkner admitted to deceiving the FAA and Boeing's airline customers about MCAS's "egregious," "rampant" performance, along with the need to include MCAS in the MAX's operating manual and require simulator training for pilots. Senator Duckworth lambasted Defendants during congressional

hearings for "not [telling] the whole truth to this committee and to the families and to the people looking at this." And Boeing did not provide the FAA with numerous incriminating documents, including statements by Forkner that he "still ha[dn't] been forgiven by god for the covering up [he] did," and communications that employees would "be shocked if the FAA passes this turd," until December 23, 2019, long after the two MAX crashes and the congressional hearings, and not until Boeing announced the departures of Muilenburg and Luttig. On their release, Chairman DeFazio opined that those documents "paint a deeply disturbing picture of the lengths Boeing was apparently willing to go to in order to evade scrutiny from regulators, flight crews and the flying public, even as its own employees were sounding alarms internally."

### K. Muilenburg And Other Senior Executives Suddenly Departed Boeing

348. Defendants' scienter is also evidenced by the sudden resignations and firings of several top executives, including Defendant Muilenburg, BCA President Kevin McAllister, Counselor and Senior Advisor to the Board (and former General Counsel) J. Michael Luttig, and senior communications executives Linda Mills and Anne Toulouse. Each of those departures occurred in the wake of the two 737 MAX crashes, in connection with Defendants' failures to provide accurate information to investors and regulators and otherwise manage the Company's response to the MAX crisis.

## VIII. DEFENDANTS' MATERIALLY FALSE AND MISLEADING STATEMENTS AND OMISSIONS

349. Throughout the Class Period, Defendants made numerous materially false and misleading statements and omissions concerning the safety problems of the 737 MAX, the extent to which those problems had been concealed from the public and regulators, and how those issues would impact Boeing's business.

### A. Defendants' Materially False And Misleading Representations And Omissions Directly After The Lion Air Crash

350. On October 29, 2018, Lion Air Flight JT 610 crashed. The public's attention quickly turned to whether the 737 MAX was safe to fly, including whether underlying safety problems with the 737 MAX caused the Lion Air Crash or threatened additional crashes of 737 MAX planes moving forward.

351. On November 6, 2018, Boeing issued Flight Crew Operations Manual Bulletin TBC-19, with the subject "Uncommanded Nose Down Stabilizer Trim Due to Erroneous Angle of Attack (AOA) During Manual Flight Only" (defined above as the "November 6 Bulletin").

352. In the November 6 Bulletin, Boeing falsely represented that its existing Flight Crew Operations Manual was sufficient and as it "***direct[ed] flight crews to existing procedures*** to address" the "AOA failure condition" that contributed to the Lion Air Crash – suggesting that the Lion Air Crash was caused by pilot error and failure to follow the manual.

353. The November 6 Bulletin stated in pertinent part:

> **Background Information**
>
> The Indonesian National Transportation Safety Committee has indicated that Lion Air flight 610 experienced erroneous AOA data. Boeing would like to call attention to an AOA failure condition that can occur during manual flight only. ***This bulletin directs flight crews to existing procedures to address this condition***. . . .
>
> **Operating Instructions**
>
> In the event an uncommanded nose down stabilizer trim is experienced on the 737-8/-9, in conjunction with one or more of the above indications or effects, do the Runaway Stabilizer NNC [non-normal checklist] ensuring that the STAB TRIM CUTOUT switches are set to CUTOUT and stay in the CUTOUT position for the remainder of the flight.

354. Moreover, in the November 6 Bulletin, Boeing represented that "erroneous AOA data" contributed to the Lion Air Crash, but made no mention of MCAS, including that MCAS improperly relied on only a single AoA sensor.

355. The statements discussed in Paragraphs 352 to 354 were materially false and misleading when made, and omitted material facts necessary to make those statements not misleading. Specifically, it was false and misleading to claim that "existing procedures" would address an MCAS failure because, among other things, (i) the flight control manual did not even mention MCAS, (ii) pilots had not been told about the existence of MCAS, (iii) the "existing procedures" to address a "runaway stabilizer" situation were not identical to the procedures necessary to address an MCAS failure, including that the operation of the cut-off switches had been changed from prior models of the 737 and pulling back on the control stick would not permanently disengage MCAS the way it would disengage trim stabilizers in older 737 models, (iv) MCAS could repeatedly activate, (v) MCAS had much greater authority to rotate the nose of the plane downward than previously disclosed, and (vi) in certain situations it would be physically impossible to correct an MCAS activation using physical force through the trim wheel. Moreover, Boeing's pilots had identified multiple safety concerns with the MAX during development and testing, including that (a) MCAS had been "running rampant" and "the plane [was] trimming itself like crazy" in the simulators; (b) Boeing had manipulated the certification process with the FAA to override multiple safety concerns and had "jedi mind-tricked" regulators to limit information about MCAS and necessary pilot training; and (c) several of Boeing's senior employees had raised significant alarms about safety at Boeing, including Pierson raising his concerns directly to Muilenburg and then to the Board highlighting "the sheer volume of these issues highlights the considerable & unnecessary risk the company was (is still?) taking to meet ever increasing airplane production rates and delivery schedules."

### B. Defendants' Materially False And Misleading Statements In The Month After The Lion Air Crash

356. On November 13, 2018, Boeing issued a statement that "We are confident in the safety of the 737 MAX. Safety remains our top priority." That same day, Defendant Muilenburg gave an interview to Fox Business Channel where he stated:

> The bottom line here is ***the 737 MAX is safe and safety is a core value*** for us at Boeing and it always has been and we ensure that our airplanes are safe . . .
>
> [T]here were some indications of an inaccurate angle of attack signal that was being sent to the airplane and of course our airplane has the ability to handle that ***with procedures in place*** and we've already issued a couple of additional bulletins to our operators and pilots around the world that point them back to ***existing flight procedures to handle that kind of condition***. . . .
>
> Again, we ensure that ***we provide all of the information that is needed to safely fly our airplanes*** . . .
>
> [T]he bottom line here is that the 737 MAX is a very safe airplane and we're very confident in that.

357. The statements claiming that "procedures in place" were sufficient to correct an erroneous MCAS activation, that "existing flight procedures to handle that kind of condition," and "we provide all of the information that is needed to safely fly our airplanes" were materially false and misleading for the reasons set forth herein and in Paragraph 355 above.

358. The statements claiming that the 737 MAX was a "very safe" airplane, that "safety was a core value" at Boeing, and that Defendants were "confident" that the 737 MAX was safe were materially false and misleading, and omitted material facts necessary to make those statements not misleading. Specifically, the 737 MAX had a multitude of serious safety deficiencies, including but not limited to, (i) MCAS had only a "single point of failure," which violated Boeing's own standards, regulatory requirements, and industry practice (*see* Section IV.C.1 above), (ii) Boeing had lied to and misled regulators regarding the conditions that MCAS operated under (*see* Section IV.C.2 above), (iii) Boeing knew that the AoA Disagree Alert was an

optional safety feature that cost an additional $80,000, and even though they told airlines it was installed on every plane, Defendants knew that only 20% of the MAX fleet had purchased the option (*see* Section IV.C.3 above), (iv) Boeing made multiple dangerous alterations to the MCAS initial design rendering it far more powerful and dangerous, and did so, as the Joint Report concluded, without adequately informing the FAA (*see* Section IV.C.4 above), (v) the FAA delegated almost all certification authority to Boeing and pressured and "tricked" the FAA regarding many aspects of the 737 MAX, including that Boeing did not include a reference to the MCAS in the flight control manual (*see* Sections IV.A.4 and IV.C.5), (vi) MCAS violated the requirements of Boeing's own Coordination Sheet (*see* Section IV.C.6), (vii) Boeing ignored internal warnings from its own employees regarding serious safety deficiencies in the MAX (*see* Sections IV.C.7 and IV.C.8).

359. Also on November 13, 2018, in response to an interviewer's question, Muilenburg denied that the 737 MAX in the Lion Air Crash had "a new system that wasn't disclosed to the pilots":

> ***No.*** There are new systems on the airplane that are designed to take advantage of the capabilities of the airplane and provide control capability in high angle of attack conditions and ***those systems operate properly*** and ***again in certain failure modes if there is an inaccurate angle of attack sensor feeding information to the airplane there is a procedure to handle that***. . . . We're going to make sure that we're providing all the information necessary and appropriate training, and go back to the core value here . . . ***The airplane is safe. We know how to fly it safely.*** And we're very confident in that. . . .

360. These statements were materially false and misleading when made, and omitted material facts necessary to make those statements not misleading because MCAS ***was*** an entirely new system that had never been used on any prior Boeing commercial plane (a safer version of MCAS had been used on an advanced military plane, the KC-46 Pegasus, as discussed above).

Further, the MCAS did not "operate properly" as it was susceptible to multiple catastrophic safety problems.

361. In that same interview, when asked whether Boeing provided "information in terms of what to do should something change, was that information available to the pilots? Did they know how to operate it? Should the nose be in a different position?" Muilenburg responded, "Yeah, in fact ***that's part of the training manual.*** It's an existing procedure. So the ***bulletin we put out again last weekend, over the weekend, pointed to that existing flight procedure.***"

362. Investors credited Defendants' November 6 and 13, 2018 false statements. For example, in an analyst report on November 13, 2018, Cowen reported that Boeing "attempted to correct any confusion regarding the [MAX's stall-correction] system in a recent safety bulletin issued about a week after the Lion Air crash; and because of its commitment to airline safety, we assume it will make whatever changes are warranted to avert any further incidents with the system. ***Because the MAX is a derivative aircraft, we doubt that this is a difficult-to-correct technical issue*** . . . ."

363. The statements claiming that "existing procedures" were sufficient to correct an erroneous MCAS activation were materially false and misleading for the reasons set forth herein and in Paragraph 355 above.

364. The statements claiming that the 737 MAX was a "safe" airplane and that Defendants were "confident" that the 737 MAX was safe, and that the procedures "operated properly" were materially false and misleading for the reasons set forth herein and in Paragraph 358 above.

365. On November 19, 2018, CEO Muilenburg sent an email to all Boeing employees that was also discussed in detail in the *Seattle Times*, expressing confidence in the MAX's safety

and disputing media reports. Muilenburg intended for, and knew that, this email would be leaked into the public domain. He specifically intended it to be a public statement to counter what he called "false assumptions" and speculation, stating, "***First, the 737 MAX is a safe airplane*** designed, built and supported by skilled men and women." Second, Muilenburg "***disputed specific reports***" concerning the MCAS, including "specifically den[ying] reports in some media outlets that the procedure pilots need to deal with [the MCAS's] uncommanded movements was not in the 737 pilot manual and that pilots were not trained on how to handle it." Muilenburg expressly stated: "***That's simply untrue***."

366. On November 21, 2018, Boeing issued and posted on its website a release, titled "Statement on Lion Air Flight JT 610 Investigation," in which the Company stated that "***[w]e are confident in the safety of the 737 MAX***," and "***re-emphasize[d] existing procedures for these situations***."

367. The statements claiming that the 737 MAX was a "safe" airplane and that Defendants were "confident" that the 737 MAX was safe were materially false and misleading for the reasons set forth herein and in Paragraph 358 above.

368. The statements claiming that "existing procedures" and pilot training were sufficient to correct an erroneous MCAS activation were materially false and misleading for the reasons set forth herein and in Paragraph 355 above.

369. On November 27, 2018, the Indonesian NTSC released its preliminary accident investigation report. The same day, in response to the NTSC's preliminary report, Boeing issued a public statement providing "our assurance that the 737 MAX is ***as safe as any airplane that has ever flown the skies***." Boeing again tried to blame pilot error for the crash, including actions the pilots took when the plane "experienced automatic nose down trim." Boeing noted that the NTSC

report "***does not state whether the pilots performed the runaway stabilizer procedure or cut out the stabilizer trim switches***," which were the procedures already set forth in Boeing's training materials for pilots.

370. In a November 29, 2018 *Washington Post* article titled "Boeing CEO addresses flight system update after criticism from pilots," Boeing stated that the Company's customers and passengers "have our assurance that the 737 Max is as ***safe as any airplane that has ever flown the skies***."

371. The statements claiming that the 737 MAX was a "safe" airplane and "as safe as any airplane that has ever flown the skies" were materially false and misleading for the reasons set forth herein and in Paragraph 358 above.

372. The statements attempting to blame the pilots for the crash and implying that the runaway stabilizer procedure was adequate to prevent the crash were materially false and misleading because the crash was caused by the dangerous safety issues on the 737 MAX, including those discussed herein and in Paragraph 358 above, and the existing procedures were inadequate given the unique power and authority of the MCAS, as described herein and in Paragraph 355 above. These statements were also materially misleading because Defendants never disclosed that the automatic nose down trim that occurred was due to MCAS, the repeated operation of which precipitated the Lion Air Crash.

### C. Defendants' Materially False And Misleading Representations From December 2018 Through The Ethiopian Airlines Crash

#### 1. Defendant Muilenburg's December 7, 2018 CNBC Interview

373. During a December 7, 2018 interview with CNBC, Defendant Muilenburg stated:

> Part of what we wanted to accomplish was seamless training and introduction for our customers, so ***we purposely designed the airplane to behave in the same way***. So even though it's a different airplane design, the control laws that fly the airplane are designed to make the airplane ***behave the same way in the hands of the pilot***.

374. This statement was materially false and misleading when made, and omitted material facts necessary to make those statements not misleading because the 737 MAX had substantial design changes from older 737 models and did not behave in the same way as those older models for many reasons.

375. Among other things, (i) the 737 MAX's larger engines were placed farther up on the plane's wings creating aerodynamic instability and a higher likelihood of pitch-up that was not present in older model 737s, (ii) MCAS was an entirely new (and powerful) feature not included on older 737's, (iii) the procedures for correcting an erroneous MCAS activation were different than prior procedures for correcting a runaway stabilizer as described herein and in Paragraph 355 above, and (iv) the 737 MAX was significantly less safe than older Boeing 737s as described herein and in Paragraph 358 above.

**2. Boeing's January 30, 2019 Earnings Release And Conference Call For The Fourth Quarter of 2018**

376. On January 30, 2019, Boeing released and filed with the SEC the Company's financial results for the fourth quarter of 2018 as well as Boeing's 2019 guidance. In a release attached to a Form 8-K filed that day with the SEC, Boeing stated:

> During the quarter, Commercial Airplanes delivered 238 airplanes, including the delivery of the 787th 787 Dreamliner and the first 737 MAX Boeing Business Jet. ***The 737 program delivered 111 MAX airplanes in the fourth quarter, including the first MAX delivery from the China Completion Center, and delivered 256 MAX airplanes in 2018***.

The January 30, 2019 earnings release did not discuss the Lion Air Crash, including the reasons for the crash, and did not disclose that the positive 737 MAX sales figures the Company reported were not sustainable or reliable drivers of revenues in light of the underlying problems that rendered the planes fundamentally unsafe and unsalable as described herein and in Paragraph 358 above.

377. A slide presentation accompanying the earnings release also did not refer to the Lion Air Crash or to any underlying safety or performance issues with the 737 MAX. Rather, Defendants highlighted the positive impact of the 737 MAX on the Company's financial performance, including that in 2018 Boeing "Delivered record 806 commercial airplanes, including 256 737 MAXs," with "***111 737 MAX deliveries in 4Q***"; "Increased 737 rate to 52/mo"; "Delivered the first 737 MAX from the China Completion Center"; and "***737 MAX family surpassed 5,000 net orders***." Those metrics were also discussed during Defendants' January 30, 2019 earnings call to discuss the Company's fourth-quarter 2018 financial results.

378. Defendants Muilenburg and Smith, among others, were present on and participated in the January 30, 2019 earnings call. In his opening remarks, Muilenburg discussed the above metrics concerning 737 MAX sales, and further stated that:

> [o]ur customers continue to recognize ***the superior value proposition of our more fuel-efficient airplanes as reflected in the strong intake of new orders we saw last year***. For 2019, we expect to see our new order intake to be moderated but still at a healthy pace. . . . ***Our current [737 MAX] production rate of 52 per month and planned increase to 57 this year is based on our backlog of more than 4,700 aircraft and a production skyline that is sold out into early next decade***. The 737 program added 13 new customers during the year and the MAX family surpassed 5,000 net orders in December. ***We continue to assess the market upward pressure on the 737 production rate***.

379. In his opening remarks, Defendant Smith directly tied positive financial guidance for 2019 to the 737 MAX, stating that:

(a) "[t]otal company revenue for 2019 is forecasted to be between $109.5 billion and $111.5 billion, largely reflecting higher planned 737 and 787 production rates and growth in both services as well as Defense, Space & Security. . . . Operating cash flow for 2019 is forecasted to increase by $2 billion to be between $17 billion and $17.5 billion."

(b) "***[t]he ramp-up on the 737 MAX*** production ***continues, and we expect 737 MAX to account for approximately 90% of total 737 deliveries in 2019***[.]

(c) "As we look towards the remainder of the year, our key focus areas are continuing to manage the 737 recovery progress within our factory and

> throughout our supply chain, including ***assuring rate readiness for a smooth transition to 57 a month***."

380. In response to analyst questions, Defendants discussed the 737 MAX as an extension of the older 737 and a key driver of Boeing's financial performance, but they did not discuss the Lion Air Crash or the underlying problems that rendered the 737 MAX unsafe and threatened sales and operations of the plane. For example, in response to a Morgan Stanley analyst's question on the monthly production rate of the 737, Muilenburg stated, "Certainly, 737 production system health remains a key focus for us. . . . ***[W]e're moving forward on our plans to ramp up to 57 a month during the year. . . .*** [W]e're going to be very, very disciplined in that process. Again, we're making good progress, ***we know exactly what needs to be done***."

381. An analyst from Baird then asked "specifically, around 737 MAX orders. . . . [j]ust how you're thinking about the order momentum with that program." Defendant Muilenburg responded:

> ***[W]e continue to see strong order momentum there***. I think just another sign of it, this week earlier, you saw ANA's announcement about their intent to buy the MAX. And that's another addition to the fleet there. So you see continued momentum on the MAX sales front. ***That airplane is creating value in the market for our customers***. And we are oversold against our production profile. ***We talked earlier about ramping up to 57 a month. We are oversold against that profile. We're filling skyline slots way out in 2023 . . . But in terms of the MAX, the demand signals in the marketplace continue to be very strong.***

382. Investors credited Defendants' January 30, 2019 misleading statements. For example, in an analyst report issued that day, Canaccord Genuity reported that "[w]e currently assume ~665 737 2019 deliveries . . . . The company has indicated that the MAX is expected to account for ~90% of the 2019 mix, and then should be effectively 100% of the commercial 2020 737 deliveries."

383. The statements in Paragraphs 378-81 were materially false and misleading when made, and omitted material facts necessary to make those statements not misleading because,

among other things, Defendants failed to disclose that Boeing was at that time discussing material changes to the MCAS software that would be necessary for the planes to safely fly.

384. Defendants also failed to disclose that material changes to pilot training would be necessary for pilots to safely fly the 737 MAX. Finally, Defendants failed to disclose the dangerous safety issues on the 737 MAX, including those discussed herein and in Paragraph 358 above.

385. These safety issues made the MAX fundamentally unsafe and violated regulatory requirements such that, unbeknownst to investors, its continued sales and production could not reasonably be relied upon. Indeed, this is exactly what happened. The entire 737 MAX fleet was grounded, Boeing halted production of the 737 MAX, multiple customers canceled or substituted existing 737 MAX orders, and Boeing agreed that the expensive, extensive pilot simulator training that initially threatened 737 MAX sales is now a prerequisite to the fleet returning to service.

### 3. Defendant Smith's February 6, 2019 Session With Cowen And Company

386. On February 6, 2019, Defendant Smith participated in a question-and-answer session with Cowen and Company ("Cowen") as part of that day's Cowen Aerospace/Defense & Industrials Conference. In response to a question about commercial demand, Smith stated that Boeing was "delivering a competitive advantage," because "you look at the MAX, the demand that's been on the MAX and the economics associated with what the MAX can deliver for the customer. . . . [T]he efficiencies being brought in the market is certainly driving some of this replacement."

387. Smith also discussed Boeing's purported ability to secure certifications for the 737 MAX, as well as production levels. Specifically, Smith stated that:

> ***[C]ertification is a big part of any development program, but I'd like to think we get well ahead of that*** and obviously working for a way through 737 and all the

> derivatives of the 737 MAX . . . . So I think we got a good plan in place. ***I wouldn't tell you that we see anything that's been outside the norm of what we've normally been through in our certification of our other aircraft***. . . . I think we've talked about several times and recently on the call is been ***getting stable at 52 [planes per month] and getting the confidence and the rate readiness to go up to 57***[.]

Smith continued, "there's opportunity to continue to grow cash flow going forward. This is very much about execution. It's right at the core. It's – and you talked about a lot of the moving pieces. ***So 737, going up to 52 and getting to 57***. That's a driver."

388. Investors credited Defendants' February 6, 2019 false statements. In an analyst report issued that day, Cowen reported that "BA's 737 productivity is on track," "737 skyline is comfortably oversold," and "737 cash profitability should improve at the 57 rate . . . ."

389. On February 8, 2019, Boeing filed its 2018 Annual Report with the SEC on Form 10-K (the "2018 10-K"), signed by Defendants Muilenburg and Smith, among others. The 2018 10-K included a section highlighting the "737 Program," in which Defendants stated: "***We continue to plan to increase the production rate to 57 per month in 2019.***"

390. The 2018 10-K also included a "Program Development" chart "summariz[ing] the time horizon between go-ahead and planned initial delivery for major Commercial Airplanes derivatives and programs," showing initial deliveries of the 737 MAX 8 in 2017, the 737 MAX 9 in 2018, the 737 MAX 7 in 2019, and the 737 MAX 10 in 2020.

391. The statements in Paragraphs 386-87 and 389-90 were materially false and misleading when made, and omitted material facts necessary to make those statements not misleading. Defendants falsely represented that the 737 MAX would drive Boeing's growth and financial results, including by producing the planes at an ever-increasing rate to meet market demand. But Defendants failed to disclose that Boeing was at that time discussing material changes to the MCAS software that would be necessary for the planes to safely fly.

392. Defendants also failed to disclose that material changes to pilot training would be necessary for pilots to safely fly the 737 MAX. Finally, Defendants failed to disclose the dangerous safety issues on the 737 MAX, including those discussed herein and in Paragraph 358 above.

393. These safety issues made the MAX fundamentally unsafe and violated regulatory requirements such that, unbeknownst to investors, its continued sales and production could not reasonably be relied upon. Indeed, this is exactly what happened. The entire 737 MAX fleet was grounded, Boeing halted production of the 737 MAX, multiple customers canceled or substituted existing 737 MAX orders, and Boeing agreed that the expensive, extensive pilot simulator training that initially threatened 737 MAX sales is now a prerequisite to the fleet returning to service.

### D. Defendants' False And Misleading Representations And Omissions Directly Following The Ethiopian Airlines Crash

394. On March 10, 2019, Ethiopian Airlines Flight ET 302 crashed. The Ethiopian Airlines Crash raised numerous questions about the completeness and veracity of Defendants' statements about the 737 MAX following the Lion Air Crash, and brought intense public focus to bear on Boeing and the safety of the 737 MAX.

395. In the face of this disaster and the growing international demand to ground all 737 MAX planes, Boeing went into damage control. The day after the Ethiopian Airlines Crash, on March 11, 2019, Boeing issued and posted on its website a press release (the "March 11 Release") concerning the crash, including an incomplete and misleading disclosure of the role MCAS played in the crash. Boeing again blamed pilot error for the crash, assured the public that "***the 737 MAX is a safe airplane***," represented that an upcoming update to MCAS software would resolve any concerns about the plane moving forward, and falsely represented that MCAS operated only in "***a non-normal part of the operating envelope***."

396. The March 11 Release, titled "Boeing Statement on 737 MAX Software Enhancement," stated:

> ***Safety is a core value*** for everyone at Boeing and the safety of our airplanes, our customers' passengers and their crews is always ***our top priority***. ***The 737 MAX is a safe airplane*** that was designed, built and supported by our skilled employees who approach their work with the utmost integrity.
>
> For the past several months and in the aftermath of Lion Air Flight 610, Boeing has been developing a flight control software enhancement for the 737 MAX, designed to ***make an already safe aircraft even safer***. . . .
>
> A pitch augmentation control law (MCAS) was implemented on the 737 MAX to improve aircraft handling characteristics and decrease pitch-up tendency at elevated angles of attack. It was put through flight testing as part of the certification process prior to the airplane entering service. ***MCAS does not control the airplane in normal flight; it improves the behavior of the airplane in a non-normal part of the operating envelope***.
>
> ***Boeing's 737 MAX Flight Crew Operations Manual (FCOM) already outlines an existing procedure to safely handle the unlikely event of erroneous data coming from an angle of attack (AOA) sensor***. The pilot will always be able to override the flight control law using electric trim or manual trim. In addition, it can be controlled through the use of the existing runaway stabilizer procedure as reinforced in the Operations Manual Bulletin (OMB) issued on Nov. 6, 2018.

397. On March 12, 2019, Boeing released and posted on its website an additional false, reassuring statement concerning the safety of the 737 MAX and the adequacy of existing information to pilots, titled "Statement on 737 MAX Operation," which stated:

> Safety is Boeing's number one priority and ***we have full confidence in the safety of the 737 MAX***. We understand that regulatory agencies and customers have made decisions that they believe are most appropriate for their home markets. We'll continue to engage with them to ensure they have the information needed to have confidence in operating their fleets. The United States Federal Aviation Administration is not mandating any further action at this time, and based on the information currently available, ***we do not have any basis to issue new guidance to operators***.

398. Investors credited Defendants' false statements reassuring the public after the Ethiopian Airlines Crash that the magnitude of the MAX's safety failings would be easily addressed through a simple software fix. For example, in an analyst report issued on March 13,

2019, Cowen reported that "Boeing claims the update [to MCAS] is easily installed in several hours, and it will begin to update planes in the field shortly while also implementing the fix on planes coming off the line."

399. The statements claiming that the 737 MAX was a "safe airplane," that safety was Boeing's "top priority" and a "core value" for Boeing were materially false and misleading for the reasons set forth herein and in Paragraph 358 above.

400. The statements claiming that "existing procedures" in the flight control manual were sufficient to correct an erroneous MCAS activation were materially false and misleading for the reasons set forth herein and in Paragraph 355 above.

401. On March 13, 2019, despite a personal plea to the President of the United States made by Defendant Muilenburg, the FAA and NTSB determined that 737 MAX flights could not be safely flown and grounded them indefinitely. In a press release posted on its website the same day titled "In Consultation with the FAA, NTSB and its Customers, Boeing Supports Action to Temporarily Ground 737 MAX Operations," Boeing again represented that it had been developing a flight control software "enhancement," but nevertheless maintained that the planes were safe.

402. In the March 13, 2019 release, Defendant Muilenburg claimed that Boeing agreed with the regulators' order to ground the 737 MAX only "out of an abundance of caution":

> Boeing continues to ***have full confidence in the safety of the 737 MAX***. However, after consultation with the U.S. Federal Aviation Administration (FAA), the U.S. National Transportation Safety Board (NTSB), and aviation authorities and its customers around the world, Boeing has determined – out of an abundance of caution and in order to reassure the flying public of the aircraft's safety – ***to recommend to the FAA the temporary suspension*** of operations of the entire global fleet of 371 737 MAX aircraft. . . .
>
> [S]aid Dennis Muilenburg . . . . "***We are supporting this proactive step out of an abundance of caution***. ***Safety is a core value*** at Boeing for as long as we have been building airplanes; and it always will be. There ***is no greater priority*** for our company and our industry. We are doing everything we can to understand the cause

> of the accidents in partnership with the investigators, deploy safety enhancements and help ensure this does not happen again."

403. The statements claiming that Boeing had "full confidence in the safety" of the 737 MAX, that the 737 MAX was a "safe airplane," that there was "no greater priority" for Boeing other than safety and that "safety is a core value at Boeing" were materially false and misleading for the reasons set forth herein and in Paragraph 358 above.

404. It was also materially false and misleading for Defendants to claim that they "recommend[ed]" and were "supporting" the FAA's suspension of the 737 MAX because Boeing fought against the decision to ground the MAX. The FAA made the decision over Boeing's objections, issuing an ***emergency order*** titled "EMERGENCY ORDER OF PROHIBITION" banning the 737 MAX from flight, and releasing a statement:

> The FAA is ordering the temporary grounding of Boeing 737 MAX aircraft operated by U.S. airlines or in U.S. territory. The agency made this decision as a result of the data gathering process and new evidence collected at the site and analyzed today. This evidence, together with newly refined satellite data available to FAA this morning, led to this decision.

Rather than supporting the decision to ground the planes, as noted above and reported in *The New York Times*, Muilenburg called the President and personally "made the case that the 737 MAX planes should ***not*** be grounded in the United States."

## E. Defendants' Materially False And Misleading Representations And Omissions Throughout The Rest Of The Class Period

### 1. Defendants' Materially False And Misleading Representations And Omissions After The FAA's Decision To Ground The MAX

405. Even in the face of a nearly unprecedented FAA "emergency" order grounding the entire 737 MAX fleet, Defendants continued to maintain that the 737 MAX was safe. On March 17, 2019, Boeing released and posted on its website a statement by Defendant Muilenburg where

he claimed that the investigatory and remedial steps Boeing was taking following the two crashes were simply "part of our standard practice."

406. On March 18, 2019, Defendants issued and posted on Boeing's website another false statement. Specifically, Boeing issued a press release that day in the form of a letter from Defendant Muilenburg "to Airlines, Passengers and the Aviation Community," in which Muilenburg stated in pertinent part:

> ***Safety is at the core*** of who we are at Boeing, and ensuring safe and reliable travel on our airplanes is an ***enduring value and our absolute commitment to everyone***. This overarching focus on safety spans and binds together our entire global aerospace industry and communities . . . ***we're taking actions to fully ensure the safety of the 737 MAX***. . . .
>
> [W]e'll continue providing the best products, training and support to our global airline customers and pilots. ***This is an ongoing and relentless commitment to make safe airplanes even safer***. Soon we'll release a software update and related pilot training for the 737 MAX that will address concerns discovered in the aftermath of the Lion Air Flight 610 accident.

407. On March 22, 2019, Boeing repeated its representations that the 737 MAX was safe and that the information provided to pilots was sufficient to ensure the plane's safe operation, stating:

> All Boeing airplanes are certified and delivered to ***the highest levels of safety consistent with industry standards***. Airplanes are delivered with a baseline configuration, which includes a standard set of flight deck displays and alerts, crew procedures and training materials that meet ***industry safety norms*** and most customer requirements. Customers may choose additional options, such as alerts and indications, to customize their airplanes to support their individual operations or requirements.

408. On March 27, 2019, Boeing conducted a meeting with more than 200 pilots and airline executives at its factory in Renton, Washington concerning the proposed updates to the software. As *The New York Times* reported, during Defendants' March 27, 2019 presentation, Boeing continued to maintain that the 737 MAX was fundamentally safe. In a statement posted

on Boeing's website, Defendants represented that the Company "developed an MCAS software update ***to provide additional layers of protection*** if the AOA sensors provide erroneous data."

409. Investors credited Defendants' March 2019 false statements about Boeing's knowledge of and ability to easily fix the 737 MAX's safety problems. For example, in an analyst report issued March 22, 2019, Morgan Stanley reported that, "per Boeing management, the upgrades have been tested in the field and in simulators . . . . Furthermore, the upgrades can be installed within a short period of time (~1 hour), leading us to believe that 737 MAX aircraft could be back in the air over the coming 1-2 months."

410. These "safety" related statements were materially false and misleading for the reasons set forth herein and in Paragraph 358 above. The magnitude of the safety fixes necessary to make the 737 MAX safe was so great that, eleven months later at the time of the filing of this Complaint, the planes remain grounded.

411. The statements claiming that Boeing had provided pilots with all the necessary information up to "industry norms" were materially false and misleading for the reasons set forth herein and in Paragraphs 355 and 358 above.

### 2. Defendants' False Statements After The Ethiopian Accident Investigation Bureau Report

412. On April 4, 2019, the Ethiopian Accident Investigation Bureau ("AIB") issued its preliminary investigation report concerning the Ethiopian Airlines Crash. AIB's report indicated that the Ethiopian Airlines team followed Boeing's manual and guidance to the extent possible, but they were unable to avoid the crash due to an absence of information about the underlying problems with MCAS and the plane's AOA sensor, and how to override or disable MCAS in the event of an erroneous activation.

413. On April 5, 2019, Boeing released and posted on its website another statement by Muilenburg, proclaiming "We Own Safety" and ostensibly providing a "737 MAX Software, Production and Process Update." In that release, filed with the SEC attached to a Form 8-K, Defendants announced a production slowdown for the 737 MAX, shocking investors and causing a negative stock-price reaction. But Muilenburg's statement included reassuring false information to temper that negative reaction, as Muilenburg stated in relevant part:

> We now know that the recent Lion Air Flight 610 and Ethiopian Airlines Flight 302 accidents were caused by a chain of events, with a common chain link being erroneous activation of the aircraft's MCAS function. We have the responsibility to eliminate this risk, and ***we know how to do it*** . . . We're also finalizing new pilot training courses and supplementary educational material for our global MAX customers. This progress is the result of our comprehensive, disciplined approach and taking the time necessary to get it right. . . . ***Safety is our responsibility, and we own it***.

414. Investors credited Defendants' April 5, 2019 false statements. For example, in an analyst report issued April 8, 2019, Cowen reported that "MCAS's technical issues look very fixable; and we're confident BA's proposed software/training update will correct its deficiencies. . . . Pluses include . . . BA's willingness to 'own' the MCAS issue . . . ."

415. Defendant Muilenburg made similar statements during his April 11, 2019 speech during the George W. Bush Presidential Center's Annual Forum on Leadership, in which he represented that Boeing was proceeding apace on "***the path to final certification***":

> From the days immediately following the Lion Air accident, our top engineers and technical experts have been working tirelessly in collaboration with the Federal Aviation Administration and our customers ***to finalize and implement a software update that will ensure accidents like these never happen again***. ***The update will make the 737 MAX even safer*** by preventing erroneous angle-of-attack sensor readings from triggering the Maneuvering Characteristics Augmentation System, or MCAS, something that initial investigation reports indicate occurred in both MAX accidents as one link in a longer chain of events. We know we can break this chain link . . .
>
> Third, we must deliver results with excellence in all that we do. . . . ***[W]e continue to demonstrate that we've identified and met all certification requirements. We***

> ***look forward to completing near-term milestones on the path to final certification.***

416. The "safety" related statements above were materially false and misleading for the reasons set forth herein and in Paragraph 358 above.

417. The statement that Boeing had "met all certification requirements," which was intended to convey to investors that the MAX would soon be re-certified for flight, was materially false and misleading because the FAA was nowhere close to re-certifying the MAX and, in fact, the investigations into the MAX's safety issues were nearer to the beginning than the end.

418. The statements claiming that Boeing had provided pilots with all the necessary information up to "industry norms" were materially false and misleading for the reasons set forth herein and in Paragraphs 355 and 358 above.

### 3. Boeing's First Quarter 2019 Disclosures

419. On April 24, 2019, Boeing filed its Quarterly Report for the first quarter of 2019 with the SEC on Form 10-Q (the "1Q19 10-Q"). Boeing also issued a press release, which it filed with the SEC attached to a Form 8-K, announcing its financial results for the first quarter of 2019. In that release, Boeing stated that it was "***making steady progress on the path to final certification*** for a software update for the 737 MAX," and "***continues to work closely with global regulators*** and our airline partners to comprehensively test the software and finalize a robust package of training and educational resources."

420. In addition, in the 1Q19 10-Q, which was signed by Defendants Muilenburg and Smith, Defendants discussed the FAA's order to ground the 737 MAX following the Lion Air Crash and the Ethiopian Airlines Crash. Defendants stated:

> We have been developing a software update to the Maneuvering Characteristics Augmentation System (MCAS) on the 737 MAX, together with an associated pilot training and supplementary education program. ***We continue to work with the FAA and other regulatory agencies worldwide to develop and certify the software***

> ***update and training program***. Charges recognized during the first quarter of 2019 related to the MCAS software update and related pilot training were immaterial.

421. On April 25, 2019, Boeing held its earnings conference call with analysts for the first quarter of 2019. As J.P. Morgan reported on April 24, 2019, "[w]hile the upcoming earnings call is formally a financial discussion, we expect many others to listen, and management will likely focus on the broader issues of safety and its work to return the MAX to service with the confidence of its customers, which is appropriate, in our view."

422. During the April 25, 2019 earnings call, in response to analysts' questions, Muilenburg stressed that "[o]ur 737 program has a backlog of more than 4,400 aircraft and a production skyline that is sold out into early next decade."

423. Defendant Smith, in turn, gave opening remarks concerning Boeing's financial results. Smith claimed to "touch on the 737 MAX and explain how the grounding has impacted our financials to date and what we're focused on today and going forward." According to Smith, "[a]s Dennis [Muilenburg] noted, ***we're taking steps amid current challenges to preserve the future value and growth of this important franchise*** for our company and for our customers."

424. During the April 25, 2019 earnings call, analysts were intently focused on the two 737 MAX crashes, including the plane's design, certification process, and Boeing's ability to fix the safety problems that led to the plane's grounding. In response to a question from Sanford C. Bernstein & Co. concerning the crashes and the Company's actions to solve the underlying problems that led to them, Muilenburg falsely stated:

> Both accidents were a chain of events. We know there was one common link in that chain of events, and that was the activation of the MCAS system with erroneous angle of attack data. That's been well published. And as we said, ***we understand how to address that link. That's our responsibility. We own that***, and that's what that software update does. . . .

> The next step in that process will be the certification flight under the FAA's authority, and we are working with the FAA right now to prepare for that in the near term. . . .

425. Bank of America Merrill Lynch then asked Muilenburg:

> how does this happen right? I mean, this sort of seemingly sort of came out of nowhere. I mean, is there any way you can kind of give us a feeling for how did this slip through the engineering organization? How did it slip through the FAA? Can you give us a feel for that? . . . [T]hat's the part that befuddles me most about all this because it doesn't seem like there was a lot of new science going on here, right? . . . This seems to be applications of existing technology to an existing platform."

In response, Muilenburg again falsely blamed pilot error and stated that "there [wa]s no technical slip or gap here":

> ***[T]here is no technical slip or gap here***, right? Again as I mentioned, we know that both accidents were a series of events, and that is very common to all accidents that we've seen in history. And in – what we know is that in this case, there was erroneous angle of attack information that came into the airplane form multiple causes. We know that at some point during the flight, that activated the MCAS control loss. And we know that ultimately, ***there were actions or actions not taken that contributed to the final outcome***. . . .
>
> ***I can tell you with confidence that we understand our airplane***. We understand how the design was accomplished, how the certification was accomplished and remain fully confident in the product that we put in the field. But we also know there are areas where we can improve, and that is the source of the software update here. But ***there was no surprise or gap or unknown here or something that somehow slipped through a certification process. Quite the opposite. We know exactly how the airplane was designed. We know exactly how it was certified***. We have taken the time to understand that. That has led to the software update that we've been implementing and testing, and we're very confident that ***when the fleet comes back up, the MAX will be one of the safest airplanes ever to fly***.

426. Investors credited Defendants' false statements in connection with Boeing's 1Q19 earnings release. For example, in an analyst report issued April 24, 2019, Credit Suisse reported that Defendants provided "More Clarity on MAX" which "we think the market will receive . . . [with] some level of relief." Likewise, Credit Suisse reported on April 24, 2019 that Boeing was "[m]aking progress on MAX fix," writing that, "Mgmt. struck a reassuring tone, and though the

earnings call was light on specifics, the company laid out its plan to resolve the MAX issues and rebuild trust."

427. The statements that Boeing was "making steady progress on the path to final certification for a software update for the 737 MAX," and was "taking steps . . . to preserve the future value and growth of this important franchise," while purporting to "understand our airplane" and "understand how to address" MCAS's software problems were materially false and misleading. Through those statements, Defendants misled investors into believing that they would soon correct the MAX's underlying safety deficiencies, such that the 737 MAX would be re-certified for flight and positively impact Boeing's business and financial results.

428. In truth, the 737 MAX was fundamentally unsafe such that its continued sales and flight could not have reasonably been relied on, as set forth herein and in Paragraph 358 above. Indeed, due to the fundamentally unsafe nature of the 737 MAX, the entire 737 MAX fleet was grounded, Boeing halted production of the 737 MAX, multiple customers canceled or substituted existing 737 MAX orders, and Boeing agreed that the expensive, extensive pilot simulator training that initially threatened 737 MAX sales is now a prerequisite to the fleet returning to service.

429. Defendants' statements concerning their close working relationship with the FAA and other regulators were also materially false and misleading. In truth, Defendants improperly pressured the FAA into rushing re-certification of the plane on an accelerated timeline. Moreover, as internal messages from 737 MAX Chief Technical Pilot Forkner and others show, Boeing pressured and misled the FAA into improperly certifying the MAX and Boeing employees bragged about "jedi-mind tricking" the FAA into not including necessary information about MCAS and its operation in the flight manual for the MAX, as described above, including in Sections IV.C.2, IV.C.4, and IV.C.5.

430. Indeed, Boeing initially secured the MAX's certification through a campaign of misleading statements and mockery, and as discussed above in Section IV.A., the Joint Report concluded, the FAA was not aware of the details of the MCAS function and other safety issues because certification documents Boeing provided to the FAA "were not updated during the certification program to reflect" subsequent changes to the 737 MAX design, and "the information and discussions about MCAS were so fragmented and were delivered to disconnected groups" that it "was difficult to recognize the impacts and implications of this system." The Joint Report concluded that the FAA would not have certified the MAX if it had been provided complete and accurate information by Boeing.

#### 4. Defendants' False And Misleading Response To Southwest Airlines' April 28, 2019 Statements Concerning The AoA Disagree Lights

431. On April 28, 2019, Southwest Airlines called into question the veracity of Defendants' statements about the functionality and adequacy of key safety features that should have been installed in the 737 MAX planes that Boeing delivered to Southwest. On April 28, 2019, Southwest stated:

> Upon delivery (prior to the Lion Air event), ***the AoA Disagree lights were depicted to us by Boeing as operable on all MAX aircraft***, regardless of the selection of optional AoA Indicators on the Primary Flight Display (PFD). ***The manual documentation presented by Boeing*** at Southwest's MAX entry into service indicated the AoA Disagree Light functioned on the aircraft, like the Lights on our NG series. After the Lion Air event, ***Boeing notified us that the AoA Disagree Lights were inoperable without the optional AoA Indicators on the MAX aircraft***. At that time, Southwest installed the AoA Indicators on the PFD, resulting in the activation of the AoA Disagree lights – both items now serve as an additional crosscheck on all MAX aircraft.

432. On April 29, 2019, Defendants responded to Southwest's statement and again falsely represented, despite the AoA Disagree Alert not being properly activated and functional, that pilots had all necessary information to safely fly the 737 MAX. In a news release posted on its website, Boeing represented that "***[o]n every airplane delivered to our customers, including***

***the MAX, all flight data and information needed to safely operate the aircraft is provided in the flight deck on the flight deck display***. This information is readily accessible to pilots, and it always has been. . . ."

433. Boeing subsequently issued a "Statement on AOA Disagree Alert" on May 5, 2019, which downplayed the key safety role that a functional AOA Disagree Alert would play in notifying pilots of faulty AoA sensors and data:

> ***On every airplane delivered to our customers, including the MAX, all flight data and information needed to safely operate the aircraft is provided in the flight deck on the primary flight deck displays***. . . .
>
> Neither the angle of attack indicator nor the AOA Disagree alert are necessary for the safe operation of the airplane. They provide supplemental information only, and ***have never been considered safety features*** on commercial jet transport airplanes.
>
> The Boeing design requirements for the 737 MAX included the AoA Disagree alert as a standard, standalone feature, in keeping with ***Boeing's fundamental design philosophy of retaining commonality with the 737NG***. In 2017, within several months after beginning 737 MAX deliveries, engineers at Boeing identified that the 737 MAX display system software did not correctly meet the AoA disagree alert requirements. The software delivered to Boeing linked the AoA disagree alert to the AoA indicator, which is an optional feature on the MAX and the NG. Accordingly, the software activated the AoA Disagree alert only if an airline opted for the AoA indicator.
>
> When the discrepancy between the requirements and the software was identified, Boeing followed its standard process for determining the appropriate resolution of such issues. That review, which involved multiple company subject matter experts, determined that ***the absence of the AoA Disagree alert did not adversely impact airplane safety or operation***. Accordingly, the review concluded ***the existing functionality was acceptable until the alert and the indicator could be delinked in the next planned display system software update***. . . .

434. These statements were materially false and misleading when made, and omitted material facts necessary to make those statements not misleading. As set forth above including in Section IV.C.3, (i) Boeing represented in the MAX's certification documents that the AoA Disagree Alert was to be a standard, ***non-optional*** safety feature of the aircraft – just as it had been

on prior 737 models, and (ii) the FAA Administrator himself stated on July 11, 2019 that the AoA Disagree Alert was part of the approved MAX design and FAA regulations required the AoA Disagree Alert to be installed on every delivered airplane.

435. These statements were also materially false and misleading to the extent they included safety-related claims about the 737 MAX for the reasons set forth herein and in Paragraph 358 above, and to the extent that they claimed "existing information" was sufficient to safely operate the 737 MAX for the reasons set forth herein and in Paragraph 355 above.

436. Finally, due to the substantial design changes from older 737 models to the 737 MAX, including the 737 MAX's larger engines placed farther up on the plane's wings and attendant aerodynamic instability and a higher likelihood of pitch-up tendencies, the presence of MCAS, its reliance on a single AoA sensor that represented a single point of failure, and the failure to train pilots in how to override and disable MCAS in the event of its erroneous activation, the 737 MAX did not "retain[] commonality with the 737NG" or "behave the same way in the hands of the pilot" as previous 737 models.

### 5. Defendants' Materially False And Misleading Representations And Omissions Made During Investor Conferences In May-June 2019

437. On May 29, 2019, Defendant Muilenburg made a presentation as part of the Sanford C. Bernstein Strategic Decisions Conference, hosted by Stanford C. Bernstein & Co. During his remarks, Muilenburg discussed the Lion Air Crash and Ethiopian Airlines Crash extensively, and represented that "we're now in the process of applying for final certification. ***We are finishing that dialogue with the FAA, working through a series of questions and answers with them***. . . ."

438. In response to an analyst's question, Muilenburg claimed that "***we're making clear and steady progress***" towards getting the 737 MAX flying again, "and that includes the work that we're doing on the airplane update, the software update, working through the certification process

with the FAA headed towards our certification flight. We're also working on updates to training and education materials."

439. Muilenburg also discussed Boeing's relationship with the FAA. In response to "the question there on the relationship with the FAA" and "the delegated authority approval and how that process works," Muilenburg stated that "I have a great deal of confidence in that process and how it works. It's a high-integrity process, and I think it's proven. It's demonstrated results. It's a way for the FAA to exercise its independent role, its regulatory role as it should, but also tap into the deep technical expertise in our company."

440. Investors credited Defendants' May 29, 2019 false statements. For example, in an analyst report issued May 30, 2019, Susquehanna Financial Group reported that "Boeing's management recently spoke at a competitor conference and provided an update on the 737 MAX situation. . . . Boeing is near to applying for final certification on the updated MCAS software. . . . after the final software fix is submitted, press reports claim that the FAA has estimated it will need 3-4 weeks to process and review before ungrounding the 737 MAX."

441. On June 5, 2019, during a presentation at the UBS Global Industrials and Transportation Conference, Defendant Smith falsely reassured investors that Boeing was "working with our regulators and ***ensuring that we're answering all the questions, addressing any concerns that are taking place***," and in doing so "[w]e've got resources from across the company. They're just turning these things around in a very timely manner, ***ensuring that we're meeting the priorities and the needs of the regulator. . . . [T]here's a lot of progress.*** There's a lot of progress that's been made. . . . [W]hat's important is we're focusing on the right things, the priorities."

442. Defendants continued to falsely assert that, although 737 MAX planes that Boeing delivered did not have properly functional and activated AoA Disagree Alerts, those alerts were

not safety features and their absence did not contribute to the two crashes. In a June 7, 2019 statement to CNET responding to a letter from Representatives Peter DeFazio of Oregon and Rick Larsen of Washington that raised concerns about faulty AoA sensors installed on 737 MAX planes, Boeing falsely responded that "***[t]he absence of the AOA Disagree alert did not adversely impact airplane safety or operation***."

443. On June 26, 2019, Muilenburg spoke to the Aspen Ideas Festival in Aspen, Colorado, and publicly represented that Boeing was "***still . . . looking at" the end of summer 2019 as the "timeframe" for the 737 MAX returning to operation***.

444. Investors credited Defendant Muilenburg's June 26, 2019 false statements. For example, in an analyst report issued that day, UBS reported that "comments by Boeing's CEO today seemed to agree with the moderator comment that a late summer return is feasible."

445. These statements that Boeing was "in the process of applying for final certification" and "finishing that dialogue with the FAA," while "looking at" the end of summer 2019 as a "feasible" timeline to return the MAX to operation were materially false and misleading. In truth, regulators repeatedly warned Defendants not to publicly represent any timeline for MAX certification, including in the June 2019 meeting between Defendant Muilenburg and then-Acting FAA Administrator Elwell at the Paris Air Show, during which Elwell told Muilenburg that Boeing should "slow down its talk of progress" and "[g]ive the FAA space to exercise scrutiny," as reported in the *Wall Street Journal* and discussed herein including in Section V.E.

446. Defendants' statements concerning their close working relationship with the FAA and other regulators as Defendants sought to work towards re-certification of the 737 MAX were materially false and misleading as discussed herein and at Paragraphs 429 and 430 above.

447. Defendants' statements concerning the AoA Disagree Alert were materially false and misleading as discussed herein and at Paragraph 434 above. Indeed, had that safety feature been present and operable, 737 MAX pilots would have had far more information regarding whether MCAS's changes to the plane's operation were appropriate and safe when they occurred, the reasons those changes occurred when they did, and how to respond in the event of erroneous MCAS operation. Defendants also failed to disclose that the decision to rely on only one AoA sensor was driven by cost-cutting concerns rather than safety.

**6. Defendants' Announcements Concerning The Company's Second Quarter 2019 Results**

448. On July 18, 2019, after the close of the market, Boeing issued a press release, filed with the SEC attached to a Form 8-K, stating that the Company would recognize a $4.9 billion charge to its earnings in the following week's release of financial results for the second quarter of 2019 due to the 737 MAX grounding. In that release, Boeing stated that it "continues to work with civil aviation authorities to ensure the 737 MAX's safe return to service," and "***has assumed that regulatory approval of 737 MAX return to service in the U.S. and other jurisdictions begins early in the fourth quarter 2019***. . . . The second-quarter financial results will further assume a gradual increase in the 737 production rate from 42 per month to 57 per month in 2020 . . . ."

449. Investors credited Defendants' July 18, 2019 false statements. For example, in an analyst report issued that day, UBS reported that "[t]he news of the charge will be overshadowed favorably by the company's early 4Q19 return to service estimate and return to 57/mo in 2020 target." Similarly, on July 19, 2019, Canaccord Genuity reported that "the initial investor reaction is a sigh of relief due to the fact that BA now expects the MAX [return to service] in Q4/19 . . . and the charge helps to put a perceive limit on the financial impact of the grounding." And Cowen

reported on July 19, 2019 that it "assume[d] ***BA's timing comments are based on its extensive interactions with regulators***."

450. On July 24, 2019, Boeing filed its financial results for the second quarter of 2019 with the SEC on Form 10-Q (the "2Q19 10-Q"). The 2Q19 10-Q was signed by Defendants Muilenburg and Smith and accompanied by a press release, which Defendants filed with the SEC attached to a Form 8-K. In that release and accompanying slides, Boeing stated that it "[c]ontinue[d] to engage global regulators and customers on 737 MAX safe return to service." In a "737 MAX" slide that focused on the plane, Boeing touted its purported "Relentless commitment to safety and quality," while claiming that the Company was "Assessing future financial implications" concerning the 737 MAX, including "Return to service timeline and conditions" and "Production rate and delivery profile."

451. On July 24, 2019, Boeing held its earnings conference call with analysts for the second quarter of 2019. During his opening remarks, Defendant Muilenburg provided "the latest on the MAX technical updates," stating that "we are working with the FAA and other regulators to complete as many elements of the certification process as possible in parallel with the development of the software update. We will submit our final certification package to the FAA once we have satisfied all of their requirements, ***which we currently estimate will be in the September time*** frame."

452. Defendant Smith similarly represented to investors that "[f]or the purpose of our second quarter financial results, we have assumed that the regulatory approval in the U.S. and other jurisdictions begin early in fourth quarter 2019."

453. Muilenburg also later represented that "***[w]e're making good, steady progress***" on the certification process, and "***we know we're making progress***." Concerning pilot training that

airlines would have to perform before flying the 737 MAX if it were certified again, Muilenburg claimed that "***we have [a] good understanding of each of those workflows. We know the work that has to be done. We are on it on a daily basis***."

454. During the call, a *Seattle Times* reporter questioned Defendants' purported September timeline for returning the 737 MAX to service, asking Muilenburg about "some optimistic assumptions in there." Muilenburg again affirmed that Boeing's "current best estimate, as we said, is to deliver our certification package, including the certification flight, in that September time frame and then ***return to service in the – early in the fourth quarter. . . . And we are assessing that on a daily basis and working hand-in-hand with the FAA in this process***."

455. Investors credited Defendants' July 24, 2019 false statements. For example, in an analyst report issued that day, Cowen reported that "Investor Reaction To MAX Production Alternatives Look[ed] Excessive," given that "BA reiterated its assumption that MAX grounding will be lifted with resumption of deliveries early in Q4 . . . ."

456. Likewise, on September 11, 2019, at the Morgan Stanley Laguna Conference, Defendant Muilenburg represented to investors that "***[o]n the 737 MAX, we're continuing to make solid progress on return to service. We're actively engaged with regulators around the world and day-to-day working with the FAA on return-to-service timing. We are making good, solid progress on the software update to the airplane . . . . And we are still targeting early fourth quarter for a return to service of the 737 MAX***." During the presentation, Muilenburg discussed Boeing's purported "***very active engagement with the FAA*** and other regulators" on "certification deliverables," claiming that "***all of that work is converging and supporting our return-to-service time line***."

457. On November 11, 2019, during market hours, Boeing issued a "737 MAX Progress Report" (the "November 11 Release"). In the November 11 Release, Boeing falsely represented that it was "***working closely with the FAA*** and other regulatory agencies as we work towards certification and safe return to commercial service, and ***we are taking the time to answer all of their questions***. . . . ***Boeing continues to target FAA certification of the MAX flight control software updates during this quarter***. Based on this schedule, it is possible that ***the resumption of MAX deliveries to airline customers could begin in December, after certification, when the FAA issues an Airworthiness Directive rescinding the grounding order***." Boeing further represented publicly that "[a]t each step of this process ***Boeing has worked closely with the FAA*** and other regulators." The market reacted positively in response to Defendants' November 11, 2019 false statements. That day, Boeing stock closed at a price of $366.96 per share, a statistically significant gain of $15.96, or 4.7%, over the prior trading day's close.

458. The statements discussed in Paragraphs 448, 451-54, and 456-57 were materially false and misleading when made, and omitted material facts necessary to make those statements not misleading. Defendants' statements concerning their close working relationship with the FAA and other regulators as Defendants sought to work towards re-certification of the 737 MAX were materially false and misleading. In truth, regulators repeatedly warned Defendants not to publicly represent any timeline for MAX certification, including in the June 2019 meeting between Defendant Muilenburg and then-Acting FAA Administrator Elwell at the Paris Air Show, during which Elwell told Muilenburg that Boeing should "slow down its talk of progress" and "[g]ive the FAA space to exercise scrutiny," as reported in the *Wall Street Journal*. Instead, Defendants improperly pressured the FAA into rushing re-certification of the plane on an accelerated timeline,

which led the FAA to chastise Defendants for their undue pressure and the baseless, aggressive re-certification timeline they represented publicly.

459. Moreover, Boeing's November 11, 2019 statement that it could resume MAX deliveries to customers in December 2019 contradicted FAA Administrator Dickson's express warning to Defendant Muilenburg in early November 2019, discussed above at Paragraph 299, that the FAA did not approve of Boeing's aggressive timeline to resume MAX deliveries. Dickson told his colleagues Boeing's announcement of anticipated December deliveries made Dickson feel as though he was being manipulated. And Defendants knew by February 2019 at the latest – when they collected and produced to the FAA internal messages from Forkner and others discussing how they pressured and misled the FAA into improperly certifying the MAX despite it being unsafe and the FCOM not including necessary information about MCAS and its operation – that rather than "working with our regulators and ensuring that we're answering all the questions" as part of the certification process, Boeing initially secured the MAX's certification through a campaign of misleading statements.

## IX. LOSS CAUSATION

460. Defendants' wrongful conduct, as alleged herein, directly and proximately caused the economic loss suffered by Plaintiffs and the Class.

461. During the Class Period, Plaintiffs and the Class purchased or otherwise acquired Boeing common shares and call options at artificially inflated prices, or wrote put options at artificially deflated prices, and were damaged thereby when the price of Boeing common stock declined as the truth was gradually revealed through partial disclosures during the Class Period. Throughout the Class Period the price of Boeing common stock and call options was artificially inflated, and the price of Boeing put options artificially deflated, as a result of Defendants' materially false and misleading statements and omissions. The price of Boeing common stock

significantly declined (causing investors to suffer losses) when Defendants' materially false and misleading statements, alleged herein to have been concealed from the market, and/or the effects thereof, were revealed, and/or the risks that had been fraudulently concealed by the Defendants materialized.

462. Specifically, Defendants' materially false and misleading statements misrepresented the magnitude of the safety deficiencies in the 737 MAX model. When those misrepresentations and misstatements were corrected, and the risk concealed by them materialized, investors suffered losses as the price of Boeing common stock declined. As a result of the disclosure of the truth of Defendants' fraud, Boeing common shares declined from a Class Period high of approximately $446.01 per share to a closing price of $327.00 on December 17, 2019, a decline of nearly 27%.

| **Date*** | **Corrective Event Summary** | **Closing Stock Price** | **Common Stock Price Change** | **S&P 500 Price Change** |
|---|---|---|---|---|
| March 10, 2019 (March 11 and 12, 2019) | On Sunday March 10, 2019, Ethiopian Airlines Flight 302 crashed six minutes after takeoff. Multiple regulators grounded all 737 MAX airplanes in their jurisdiction | March 11: $400.01<br><br>March 12: $375.41 | March 11: -5.33%<br><br>March 12: -6.15% | March 11: 1.47%<br><br>March 12: 0.30% |
| March 17, 2019 (March 18, 2019) | On Sunday, March 17, 2019, the *Seattle Times* published an investigative report that partially revealed several fundamental flaws in the MAX's safety analysis and design that materially exacerbated safety concerns with the plane. | $372.28 | -1.77% | 0.37% |

| | | | | |
|---|---|---|---|---|
| March 21, 2019 (March 21, 2019) | Before the market's open, *The New York Times* published a report that the Ethiopian Airlines and Lion Air Boeing 737 MAX planes lacked two safety features – an AoA indicator and an AOA disagree light – because Boeing charged extra for them and their importance was unknown to Boeing customers, as Boeing hid MCAS to avoid extra training requirements for pilots. | $372.70 | -0.92% | 1.09% |
| April 5, 2019 (April 8, 2019) | After the market's close on April 5, Defendant Muilenburg informed the market that Boeing would be substantially cutting production of the 737 MAX planes from 52 per month to 42 per month. | $374.52 | -4.44% | 0.10% |
| June 26, 2019 (June 27, 2019) | After the market's close, the FAA announced that a new software flaw had been discovered during testing of the software update for MCAS and that Boeing would need to fix this problem, which could be implicated during the emergency response in the event of an MCAS failure, further delaying the 737 MAX's return to the skies. | $364.02 | -2.91% | 0.38% |
| July 24, 2019 (July 24 and 25, 2019) | Before the market's open, Boeing disclosed that the protracted grounding of the 737 MAX could result in a temporary halt of production for the plane if the delays continued. | July 24: $361.43<br>July 25: $348.09 | July 24: -3.12%<br>July 25: -3.69% | July 24: 0.47%<br>July 25: -0.53% |
| October 18, 2019 (October 18 and 21, 2019) | During the trading day, *The New York Times* published a series of emails previously produced to the government in which Boeing's former Chief Technical Pilot for the 737 MAX program speaks about "jedi-mind tricking" the FAA into certifying the 737 MAX. | Oct.18: $344.00<br>Oct. 21: $331.06 | Oct.18: -6.79%<br>Oct. 21: -3.76% | Oct.18: -0.39%<br>Oct. 21: 0.69% |
| December 16, 2019 (December 17, 2019) | On December 16, 2019, Boeing announced that it would be temporarily shutting down production of the Boeing 737 MAX in January 2020. | $327.00 | -4.29% | 0.71% |

**Date(s) of stock drop(s) in parentheses.*

463. It was entirely foreseeable that Defendants' materially false and misleading statements and omissions discussed herein would artificially inflate or maintain the existing artificial inflation of the price of Boeing common stock and call options, and artificially deflate or maintain the artificial deflation of the price of Boeing put options. It was also foreseeable to Defendants that the revelation of the truth about Boeing's failure to disclose the magnitude of the safety issues in the 737 MAX model would cause the price of the Company's stock to fall as the artificial inflation caused or maintained by Defendants' misstatements and omissions was removed. The prices of the Company's options rose and fell in correspondence with the movements of the stock price and for the same reasons. Thus, the stock price declines described above were directly and proximately caused by Defendants' materially false and misleading statements and omissions.

## X. PRESUMPTION OF RELIANCE

464. At all relevant times, the market for Boeing securities was efficient for the following reasons, among others:

a) Boeing's stock met the requirements for listing, and was listed and actively traded on the New York Stock Exchange, a highly efficient market, with an average daily trading volume of 5,226,091 shares;

b) As a regulated issuer, Boeing filed periodic reports with the SEC;

c) Boeing regularly communicated with public investors via established market communication mechanisms, including through regular disseminations of press releases on the national circuits of major newswire services and through other wide-ranging public disclosures, such as communications with the financial press and other similar reporting services; and

d) Boeing was followed by at least 20 analysts employed by major brokerage firms, including. but not limited to Bank of America Merrill Lynch, Barclays, Citi, Goldman Sachs, J.P. Morgan, and UBS, who wrote reports that were distributed to those brokerage firms' sales forces and certain customers. Each of these reports was publicly available and entered the public marketplace.

465. As a result of the foregoing, the market for Boeing stock promptly digested current information regarding Boeing from all public available sources and reflected such information in Boeing's stock price. Under these circumstances, purchasers of Boeing common stock and call options at artificially inflated prices, and sellers of put options at artificially deflated prices, during the Class Period suffered similar injury through their transactions and a presumption of reliance applies.

466. In addition, Plaintiffs are entitled to a presumption of reliance under *Affiliated Ute Citizens of Utah v. U.S.*, 406 U.S. 128 (1972), because the claims asserted herein are predicated in part upon material omissions of fact that Defendants had a duty to disclose.

## XI. INAPPLICABILITY OF THE STATUTORY SAFE HARBOR AND BESPEAKS CAUTION DOCTRINE

467. The statutory safe harbor provided for forward-looking statements under certain circumstances does not apply to any of the allegedly false statements described in this Complaint. Many of the specific statements described herein were not identified as "forward-looking" when made. To the extent that there were any forward-looking statements, there was no meaningful cautionary language identifying important factors that could cause actual results to differ materially from those in the purportedly forward-looking statements. Alternatively, to the extent that the statutory safe harbor does apply to any forward-looking statements described herein, Defendants are liable for those false forward-looking statements because at the time each was made, the particular speaker knew that the particular forward-looking statement was false or misleading, and/or that the forward-looking statement was authorized and/or approved by an executive officer of Boeing who knew that those statements were false or misleading when made.

## XII. CLASS ACTION ALLEGATIONS

468. Plaintiffs bring this action as a class action pursuant to Fed. R. Civ. P. 23(a) and 23(b)(3) on behalf of a Class consisting of all those who purchased or otherwise acquired Boeing common shares, call options, or put options between November 7, 2018 and December 16, 2019, inclusive, and who were damaged thereby (the "Class"). Excluded from the Class are Defendants, the officers and directors of Boeing at all relevant times, members of their immediate families and their legal representatives, heirs, successors or assigns, and any entity in which Defendants have or had a controlling interest.

469. The members of the Class are so numerous that joinder of all members is impracticable. Throughout the Class Period, Boeing common shares were actively traded on the New York Stock Exchange. As of December 16, 2019, Boeing had nearly 563 million shares of common stock outstanding. While the exact number of Class members is unknown to Plaintiffs at this time and can only be ascertained through appropriate discovery, Plaintiffs believe that there are thousands of members of the proposed Class. Class members who purchased Boeing common shares may be identified from records maintained by Boeing or its transfer agent(s), and may be notified of this class action using a form of notice similar to that customarily used in securities class actions.

470. Plaintiffs' claims are typical of Class members' claims, as all members of the Class were similarly affected by Defendants' wrongful conduct in violation of federal law that is complained of herein.

471. Plaintiffs will fairly and adequately protect Class members' interests and have retained competent counsel experienced in class actions and securities litigation.

472. Common questions of law and fact exist as to all Class members and predominate over any questions solely affecting individual Class members. Among the questions of fact and law common to the Class are:

a) whether the federal securities laws were violated by Defendants' acts as alleged herein;

b) whether statements made by Defendants to the investing public during the Class Period misrepresented material facts about Boeing;

c) whether Defendants acted with scienter; and

d) to what extent the members of the Class have suffered damages, as well as the proper measure of damages.

473. A class action is superior to all other available methods for the fair and efficient adjudication of this action because joinder of all Class members is impracticable. Additionally, the damage suffered by some individual Class members may be relatively small so that the burden and expense of individual litigation makes it impossible for such members to individually redress the wrong done to them. There will be no difficulty in the management of this action as a class action.

## XIII. CLAIMS FOR RELIEF UNDER THE EXCHANGE ACT

### COUNT I

### FOR VIOLATIONS OF SECTION 10(b) OF THE EXCHANGE ACT AND SEC RULE 10b-5 PROMULGATED THEREUNDER (AGAINST ALL DEFENDANTS)

474. Plaintiffs repeat and re-allege each and every allegation set forth above as if fully set forth herein.

475. This Count is asserted on behalf of all members of the Class against Defendant Boeing and the Executive Defendants for violations of Section 10(b) of the Exchange Act, 15 U.S.C. § 78j(b), and Rule 10b-5 promulgated thereunder, 17 C.F.R. § 240.10b-5.

476. During the Class Period, Defendant Boeing and the Executive Defendants disseminated or approved the false statements specified above, among others, which Defendants Boeing and the Executive Defendants knew or deliberately disregarded were misleading in that they contained misrepresentations and failed to disclose material facts necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading.

477. Defendant Boeing and the Executive Defendants violated Section 10(b) of the Exchange Act and Rule 10b-5 in that they: (a) employed devices, schemes, and artifices to defraud; (b) made untrue statements of material facts or omitted to state material facts necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading; and/or (c) engaged in acts, practices, and a course of business that operated as a fraud or deceit upon Plaintiffs and others similarly situated in connection with their purchases of Boeing common stock and options during the Class Period. As detailed herein, the misrepresentations contained in, or the material facts omitted from, those statements included, but were not limited to, Boeing's failure to disclose the magnitude of the safety deficiencies in the 737 MAX model.

478. Defendant Boeing and the Executive Defendants, individually and in concert, directly and indirectly, by the use of the means or instrumentalities of interstate commerce and/or of the mails, engaged and participated in a continuous course of conducted that operated as a fraud and deceit upon Plaintiffs and the Class; made various untrue and/or misleading statements of material facts and omitted to state material facts necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading; made the above statements intentionally or with a severely reckless disregard for the truth; and employed devices and artifices to defraud in connection with the purchase and sale of Boeing common shares, call options, or put options, which were intended to, and did: (a) deceive the investing public, including

Plaintiffs and the Class, regarding, among other things, Boeing's failure to disclose the magnitude of the safety deficiencies in the 737 MAX model; (b) artificially inflate and maintain the market price of Boeing common stock and call options and artificially deflate the price of Boeing put options; and (c) cause Plaintiffs and other members of the Class to purchase Boeing common stock and/or call options at artificially inflated prices, or write put options at artificially deflated prices, and suffer losses when the true facts became known.

479. As described above, Defendant Boeing and the Executive Defendants acted with scienter throughout the Class Period, in that they either had actual knowledge of the misrepresentations and omissions of material facts set forth herein, or acted with reckless disregard for the truth in that they failed to ascertain and to disclose the true facts, even though such facts were available to them.

480. Plaintiffs and the Class have suffered damages in that, in direct reliance on the integrity of the market, they paid artificially inflated prices for Boeing common stock or call options and/or wrote Boeing put options at artificially deflated prices, which artificial inflation/deflation was removed from the stock when the true facts became known. Plaintiffs and the Class would not have transacted in Boeing common stock or options at the prices paid, or at all, if they had been aware that the market price of Boeing common stock and call options had been artificially inflated, and the price of Boeing put options artificially deflated, by Defendant Boeing and the Executive Defendants' false and misleading statements.

481. As a direct and proximate result of Defendant Boeing's and the Executive Defendants' wrongful conduct, Plaintiffs and other members of the Class suffered damages attributable to the fraud alleged herein in connection with their purchases of Boeing common shares, call options, or put options during the Class Period.

## COUNT II

### FOR VIOLATIONS OF SECTION 20(a) OF THE EXCHANGE ACT (AGAINST THE EXECUTIVE DEFENDANTS)

482. Plaintiffs repeat and re-allege each and every allegation set forth above as if fully set forth herein.

483. This Count is asserted on behalf of all members of the Class against the Executive Defendants for violations of Section 20(a) of the Exchange Act, 15 U.S.C. § 78t(a).

484. During their tenures as officers and/or directors of Boeing, each of the Executive Defendants was a controlling person of the Company within the meaning of Section 20(a) of the Exchange Act. By reason of their positions of control and authority as officers and/or directors of Boeing, these Defendants had the power and authority to direct the management and activities of the Company and its employees, and to cause the Company to engage in the wrongful conduct complained of herein.

485. As more fully described above, in their capacities as senior corporate officers of the Company, the Executive Defendants had direct involvement in the day-to-day operations of the Company, including their power to control or influence the policies and practices giving rise to Boeing's misleading statements about the magnitude of the safety deficiencies in the 737 MAX model, alleged herein, and exercised the same. The Executive Defendants made numerous false and misleading statements on Boeing's behalf at investor conferences, in SEC filings, and on earnings calls.

486. Defendants Muilenburg and Smith signed the Company's SEC filings during the Class Period. The Executive Defendants were directly involved in disseminating Boeing's false and misleading statement during the Class Period. As a result of the foregoing, the Executive

Defendants, as a group and individually, were controlling persons of Boeing within the meaning of Section 20(a) of the Exchange Act.

487. Boeing violated Section 10(b) of the Exchange Act by its acts and omissions, as alleged in this Complaint. By virtue of their positions as controlling persons of Boeing, the Executive Defendants are liable pursuant to Section 20(a) of the Exchange Act, jointly and severally to Plaintiffs and other members of the Class who purchased or otherwise acquired Boeing securities.

488. As a direct and proximate result of the Executive Defendants' conduct, Plaintiffs and the other members of the Class suffered damages in connection with their purchase or acquisition of Boeing securities.

## XIV. PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for relief and judgment, as follows:

a) Determining that this action is a proper class action under Rule 23 of the Federal Rules of Civil Procedure;

b) Awarding compensatory damages and equitable relief in favor of Plaintiffs and the other Class members against all Defendants, jointly and severally, for all damages sustained as a result of Defendants' wrongful conduct, in an amount to be proven at trial, including interest thereon;

b) Awarding Plaintiffs and the Class their reasonable costs and expenses incurred in this action, including counsel fees and expert fees; and

c) Such other and further relief as the Court may deem just and proper.

## XV. JURY DEMAND

Plaintiffs hereby demand a trial by jury in this action of all issues so triable.

Dated: February 14, 2020

Respectfully submitted,

*/s/ John C. Browne*
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# APPENDIX 1

## Glossary of Key Terms in the Consolidated Class Action Complaint

| Term | Definition/Description |
|---|---|
| **Angle of attack** | "Angle of attack" ("AoA") is the angle between the aircraft and oncoming airflow. An aircraft's lift varies with changes in its angle of attack. Increasing the angle of attack increases the aircraft's lift, until the aircraft reaches a "critical angle of attack." When the aircraft exceeds this critical angle of attack, lift decreases and the aircraft stalls. |
| **Department of Transportation** | The U.S. Department of Transportation. |
| **Dickson, Stephen** | FAA Administrator (August 2019 to present). Dickson has testified before Congress in connection with the 737 MAX investigation. |
| **DOJ** | The U.S. Department of Justice ("DOJ"). The DOJ is conducting a criminal investigation of Boeing related to the 737 MAX. |
| **Elwell, Daniel** | Acting FAA Administrator (January 2018 to August 2019). Elwell was in office during both the Lion Air and Ethiopian Airlines Crashes, and has testified before Congress in connection with the 737 MAX investigation. |
| **Ethiopian Aircraft Accident Investigation Bureau** | The investigation authority in Ethiopia responsible to the Ministry of Transport for the investigation of civil aircraft accidents and serious incidents in Ethiopia. On April 4, 2019, Ethiopia's Aircraft Accident Investigation Bureau released a preliminary accident investigation report for the Ethiopian Airlines Crash. |
| **Ethiopian Airlines Crash** | The crash of Ethiopian Airlines Flight ET 302 on March 10, 2018. |
| **Ewbank, Curtis** | A former Boeing engineer who submitted an internal ethics complaint following the Ethiopian Airlines Crash. |
| **FAA** | The Federal Aviation Administration ("FAA") is a division of the Department of Transportation with powers to regulate all aspects of civil aviation within the jurisdiction of the United States. |
| **FAA Settlement Agreement** | The agreement Boeing entered into with FAA on December 18, 2015 to resolve 13 pending investigations by the FAA of the Company. |
| **FCOM** | The Boeing 737 MAX Flight Crew Operations Manual ("FCOM") is the flight manual provided by Boeing to its customers. |

| Term | Definition/Description |
|---|---|
| **Flight control law** | A "flight control law" is software that controls a plane's operations without human direction. |
| **Flight envelope** | "Flight envelope" refers to the capabilities of a design in terms of airspeed and altitude. Flying "outside the envelope" is considered dangerous. |
| **Forkner, Mark** | Former Chief Technical Pilot for the 737 MAX Program. Forkner wrote and appears on documents that Boeing has produced to regulators and Congress in connection with their MAX-related investigations. |
| **Horizontal stabilizer** | A fixed-wing element in the aircraft's tail that prevents up-and-down, or pitching, motion of the aircraft nose. |
| **Huerta, Michael** | Former FAA Administrator (January 2013 to January 2018); Former Acting FAA Administrator (December 2011 to January 2013). Administrator Huerta was in office when Boeing entered into the FAA Settlement Agreement on December 18, 2015. |
| **Indonesian National Transportation Safety Committee** | The Indonesian National Transportation Safety Committee ("NTSC") is a government agency that investigates air, land, rail, and marine transportation accidents or deficiencies. On November 27, 2018, the Indonesian NTSC released its preliminary accident investigation report for the Lion Air Crash. |
| **Joint Report** | The October 11, 2019 Joint Authorities Technical Review ("JATR") Board Report, which issued recommendations to the FAA following the Lion Air and Ethiopian Airlines Crashes. The JATR team consisted of technical representations from agencies, including the FAA, National Aeronautics and Space Administration, the European Union Aviation Safety Agency, and the civil aviation authorities of Australia, Brazil, Canada, China, Indonesia, Japan, Singapore and the United Arab Emirates. |
| **Lion Air Crash** | Lion Air Crash is the crash of Lion Air Flight JT 610 on October 29, 2018. |
| **MCAS** | The Maneuvering Characteristics Augmentation System Boeing installed on the 737 MAX. |
| **MCAS Coordination Sheet or "Coordination Sheet"** | An internal Boeing document created and used by divisions working on a project to share relevant information and coordinate their work. |

| Term | Definition/Description |
|---|---|
| **NTSB** | The National Transportation Safety Board, a U.S. federal investigative agency that conducts accident investigations related to all forms of transportation, including air travel. The NTSB investigated both the Lion Air and Ethiopian Airlines Crashes. |
| **ODA** | The Organization Designation Authorization, a federal program where the FAA may delegate to manufacturers matters related to examinations, certifications, and inspections. Under the ODA, the FAA delegated authority to Boeing with respect to many aspects of the 737 MAX's certification. |
| **Pierson, Edward** | A former Senior Manager in Boeing's Renton, Washington 737 facility, who oversaw production support for 737 Final Assembly. Pierson has testified before Congress in connection with its 737 MAX investigation. |
| **Runaway stabilizer trim** | A procedure that Boeing prescribed to pilots in the event that the MAX pitched down uncontrollably for remediating an uncommanded movement of the horizontal stabilizer. |
| **SEC** | The U.S. Securities and Exchange Commission. |
| **Stabilizer trim** | A process by which the pilot moves the horizontal or vertical stabilizers in the plane's tail in order to avoid a stall. |
| **System Safety Analysis or Hazard Analysis** | A safety analysis performed in connection with FAA certification to identify and define hazardous conditions in an airplane's design in order to eliminate or control those conditions. |
| **Trim** | "Trim" means trimming away the forces needed to maintain a straight and level flight and avoid a stall. |
| **Trim wheel or Manual trim wheel** | Wheels in an airplane cockpit that help in controlling or setting the trim for aircraft for different stages of flight. |
| **Type certificate** | A certification issued by regulators confirming that an aircraft is manufactured according to an approved design, and that the design ensures compliance with airworthiness requirements. Updated versions of an existing plane model may be certified under the existing model's type certificate. The 737 MAX was certified under the 737 type certificate, which the FAA issued in 1967. |