



July 2020

WHAT YOU NEED TO KNOW ABOUT

The Boeing 737 MAX Grounding

PRO POINTS

- **The Boeing 737 MAX was grounded worldwide in March 2019** after two crashes, which killed a total of 346 people. After more than a year, the plane still hasn't returned to commercial service, as the FAA continues to scrutinize changes Boeing has made to address problems brought to light by the accidents.
- **In the aftermath of the crashes, technical experts and lawmakers have picked apart the original certification of the MAX** with a focus on how an automated flight-control feature was designed by Boeing and approved by the FAA.
- **Lawmakers have introduced or are preparing legislation** to respond to the crashes, and some probes are still ongoing.
- **Critics of the FAA have zeroed in on a program** that empowers companies to perform tasks related to certification. In the past, Congress has called for the program to be expanded.

HOW WE GOT HERE

Boeing's 737 MAX was grounded globally in March 2019, following two lethal crashes — one in Ethiopia that killed 157, and another five months prior off the coast

of Indonesia, killing 189 people. After the crash in Ethiopia, other countries grounded their fleets, with the U.S. eventually following.

The crashes set off a host of investigations and reviews by technical experts, DOT's watchdog, Congress and others, as well as

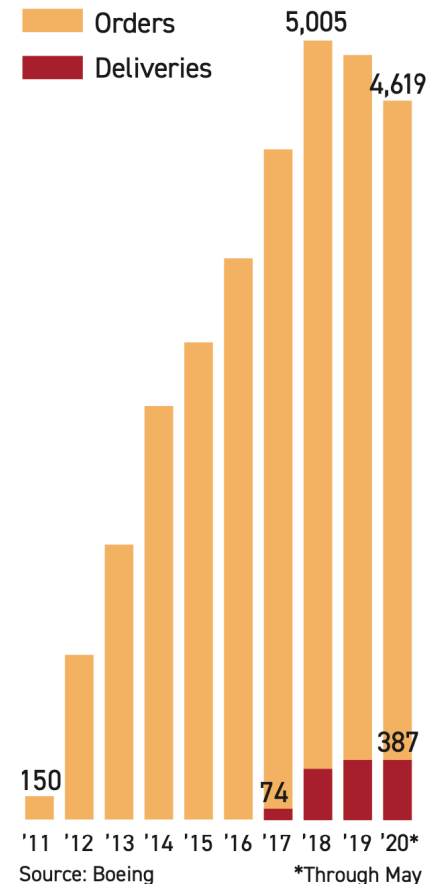
a criminal probe. Indonesian and Ethiopian authorities have led their own investigations into the crashes, while other agencies and groups have examined how Boeing developed the MAX and how the FAA certified it — a process that spanned five years.

At the heart of many of those probes has been a new flight-control feature on the MAX, known as the Maneuvering Characteristics Augmentation System. The MCAS was intended to automatically push the jet's nose down in some instances. This was necessary because of differences between the MAX and its predecessor, such as larger engines.

Years into the MAX's certification, Boeing made a major change to MCAS, giving it more power and allowing it to kick in at lower speeds than originally envisioned. The system would activate in certain situations if one of two sensors on the plane indicated that the nose was aimed too high. Information about MCAS was excluded from pilots' manuals, which has drawn criticism.

737 Max orders/deliveries

CUMULATIVE FIGURES



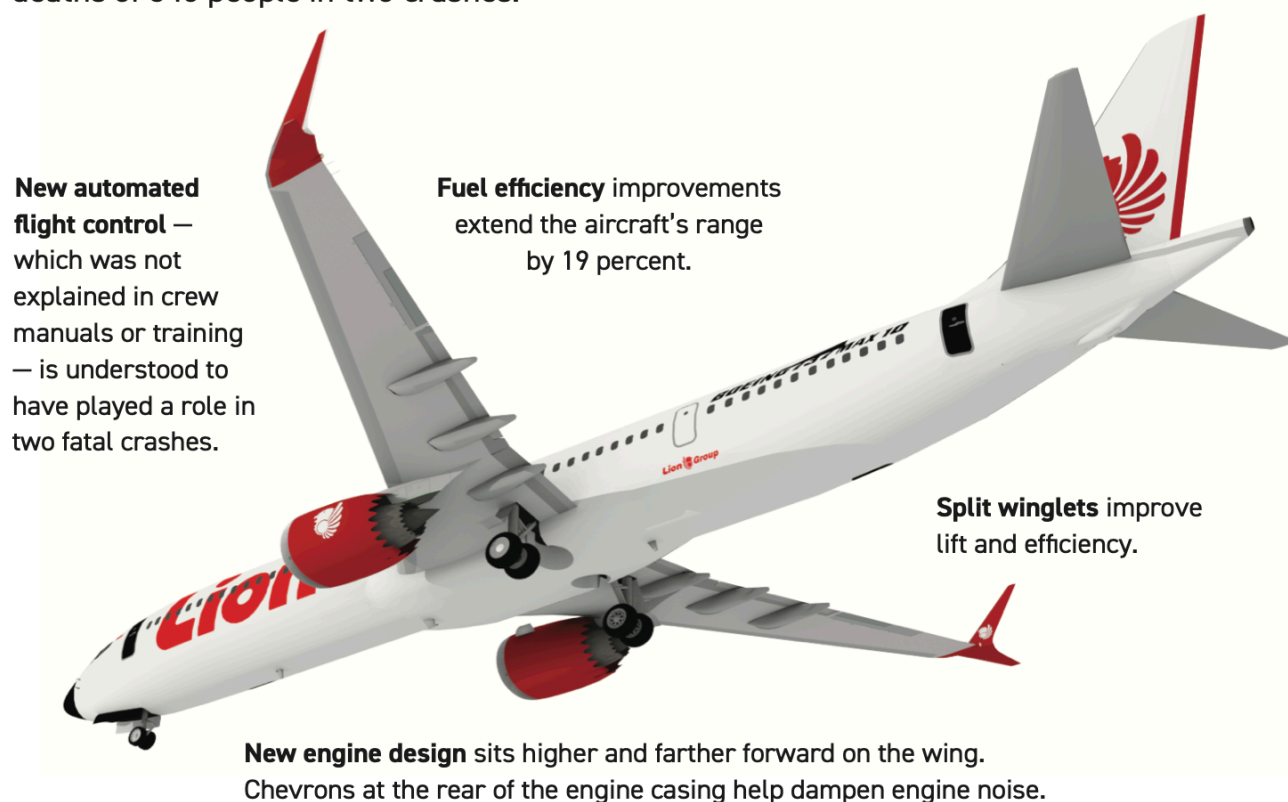


In both the Indonesian and Ethiopian accidents, the sensor in question failed, feeding incorrect data that inappropriately triggered the MCAS and setting off a cacophony of distracting alarms in the cockpit. The pilots struggled to correct course as MCAS activated repeatedly, and the planes ultimately dove into the ground or sea.

Since the crashes, the FAA has been under a microscope alongside Boeing. Investigations and reviews have found flaws in the assumptions Boeing used about pilot behavior, the manufacturer's communication with the FAA during the certification process — especially about MCAS — as well as the agency's oversight of the company.

Boeing's 737 Max promised innovation, delivered tragedies

The 737 Max incorporated several design changes to improve efficiency, reliability and flexibility, but mistakes made in certifying the aircraft overlooked flaws that led to the deaths of 346 people in two crashes.



The accidents that led to the grounding of the 737 Max

Oct. 29, 2018: Indonesian airline Lion Air Flight 610 crashed into the Java Sea 13 minutes after takeoff, killing all 189 people aboard.

March 10, 2019: Ethiopian Airlines Flight 302 crashed 6 minutes after takeoff from Addis Ababa, killing all 157 people aboard.

Source: Boeing, FAA, POLITICO staff reports



The scrutiny on the FAA has focused, in part, on a program giving manufacturers the power to carry out tasks related to certifying their planes and whether the agency's oversight was strong enough. The program has expanded over the years with Congress' encouragement. The FAA and some outside experts have defended the program, called Organization Designation Authorization. Under ODA, the FAA delegated work related to MCAS, among other items, to Boeing.

WHAT'S NEXT

Among other changes, Boeing has updated MCAS so that it now relies on data from two sensors, and requires both of them return similar readings before it is triggered. The MAX went through several days of FAA certification flight tests during the last week of June 2020 to try out Boeing's changes. After the tests, the FAA said there were more steps ahead, including evaluating the data from the flights, going through the process of setting pilot training requirements and reviewing final design documents from Boeing.

Before and for months after the crashes, Boeing asserted that pilots who flew the 737 NG — the MAX's predecessor design — only needed computer-based training to fly the MAX. Then, in January 2020, Boeing relented, saying pilots should go through training in flight simulators as well.

News reports have suggested that the FAA could lift the MAX's grounding order as soon as September 2020, but even if that timeline holds, it would still be months before airlines are able to build the plane back into their schedules.

POWER PLAYERS



Steve Dickson

He became the FAA's administrator in

August 2019 — five months into the MAX crisis. For more than a year and a half, the post had been filled on an acting basis by Dan Elwell, who has returned to his job as deputy administrator.



David Calhoun

He became the CEO of Boeing in early

2020 after Dennis Muilenburg was fired from the job. Before that, Calhoun was briefly the chairman of Boeing's board. He's been a board member for more than a decade.



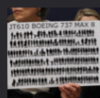
House Transportation Chair Peter DeFazio DeFazio (D-Ore.)

is expected to introduce legislation after Congress' August 2020 recess and has been sharply critical of both Boeing and the FAA.



Senate Commerce Chair Roger Wicker

Wicker (R-Miss.) has put together a bill with ranking member Sen. Maria Cantwell (D-Wash.).



Victims' families

Family members of some of the victims of the MAX crash in Ethiopia have testified before both chambers of Congress and demonstrated in front of FAA and DOT headquarters. They have slammed the FAA for not grounding the MAX after its first crash and have called for systemic changes at both the agency and Boeing.