International review denounces FAA certification of Boeing 737 Max 8

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An international team of representatives of aviation safety agencies submitted its Joint Authorities Technical Review (JATR) to the US Federal Aviation Administration (FAA) last Friday, detailing 12 major problems with the FAA's oversight of the development and certification of Boeing's 737 Max 8 jet. The report makes clear that the agency made no attempt to determine the safety of new flight control software that led to the crash to two 737 Max 8 flights and the loss of hundreds of lives.

The review is one of many that have been commissioned by various aviation safety agencies after the Max 8 was grounded in the wake of two fatal crashes in the past year—Lion Air Flight 610, which crashed last October in Indonesia, killing 189 passengers and crew, and Ethiopian Airlines Flight 302, which crashed this past March, taking the lives of 157 men, women and children. The JATR review was commissioned by the FAA itself. The review panel includes members from NASA and nine regions—Australia, Brazil, Canada, China, the European Union, Indonesia, Japan, Singapore and the United Arab Emirates.

To date, no Boeing executives have been arrested or even charged in connection with the two crashes, which took a combined 346 human lives. The only consequence so far is the removal of Boeing CEO Dennis Muilenburg from his post as chairman of the board of directors. The move was announced on Friday, leaving Muilenburg as chief executive for the time being. The company also announced that Boeing has paid nearly $5 billion to various airlines in compensation for canceled flights. The grounding of the Max 8 fleet, previously Boeing's biggest money-maker, has now been extended at least into January.

As in previous reviews of the crashes, the JATR focused its attention on the design and certification of the previously little known piece of software known as the Maneuvering Characteristics Augmentation System (MCAS), which, according to initial reports, erroneously activated, forcing the planes into a nose dive from which the pilots were unable to recover. MCAS was introduced on the Max 8 to compensate for a tendency of the aircraft to stall as a result of new and larger engines being placed on an airframe that hasn't been updated since 1967.

According to the report, "The MCAS design was based on data, architecture, and assumptions that were reused from a previous aircraft configuration without sufficient detailed aircraft-level evaluation of the appropriateness of such reuse, and without additional safety margins and features to address conditions, omissions, or errors not foreseen in the analyses."

The JATR notes that "the FAA had inadequate awareness of the MCAS function, which … resulted in an inability of the FAA to provide an independent assessment of the adequacy of the Boeing proposed certification activities associated with MCAS." This refers to the fact that after MCAS was initially certified, Boeing gave the software more automated control of the Max 8, and because it was a "change" and not a new program, the aerospace giant was not required to inform the FAA, much less the pilots who were actually flying the aircraft.

The report, while damning, does not provide evidence to indict Boeing executives and FAA administrators for knowingly putting a flying deathtrap into service. Rather, it suggests that such problems can be solved by merely changing the regulatory structure of the agency. One of its recommendations is to develop a new process to determine what material should be included in flight manuals or training simulators, skimming over

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the fact that MCAS, a system that supposedly assists with the stability of a plane, was not in manuals or simulators in the first place, even after the Lion Air crash.

Even if implemented, which the FAA is not required to do, these proposals will have little impact on the operations of one of the country's largest companies and the US military's second largest defense contractor.

Boeing itself has admitted, in a press release the day after the Ethiopian Airlines crash, that it was already developing a "flight control software enhancement" package for the Max 8 before the Lion Air crash. The company has also stated multiple times that alerts that provide pilots crucial information if MCAS incorrectly activates were not standard on their planes, while claiming that these angle-of-attack disagree alerts are "not necessary for the safe operation of the [737 Max 8]."

The JATR only tangentially addressed reports from Boeing engineers that their concerns over the development of the Max 8 as a whole, including MCAS and other cost-cutting measures, were actively suppressed by the company and the FAA. In May, two former Boeing engineers were interviewed and confirmed that at every step they were ordered to ensure that the aircraft design would not necessitate pilot retraining. This was facilitated by the FAA, which set the certification requirements in the first place, and which eventually allowed pilots to fly the new aircraft with only an hour's worth of training on a tablet and with incomplete flight manuals.

This was a major selling point for Boeing, which used the low training time and cost to compete with European rival Airbus' 320neo aircraft. At the same time, Boeing's push for the Max 8 nearly tripled the corporation's stock from January 2017 to March 2019, which in turn was a major factor in the rise of the Dow Jones during that period. In addition, Boeing planes were the biggest US export.

Pilots unions were also aware of the faulty design and suspect certification of the aircraft. While the Southwest Airlines Pilots Association is currently suing Boeing for $115 million in compensation for "misrepresentation" of the Max 8, it was aware that Boeing was "building the airplane and still designing it," and that the engineering data necessary to design flight simulators was unavailable "right up until the plane was nearly completed." Despite this, the unions raised no protest when Boeing put the plane into service.

It is unclear whether the 737 Max 8 will ever be put back into service. Boeing had stated throughout the summer that it was going to submit a software patch for MCAS to the FAA in September, but that has yet to occur.

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