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Boeing's 737 MAX: Company Culture and Product Failure

Lion Air Flight 610 departed Jakarta, Indonesia, at 6:20 a.m. on Monday, October 29, 2018, headed for Pangkal Pinang on the Bangka Belitung Islands. The flight carried 181 passengers and eight crew members. Just 13 minutes after takeoff, the Boeing 737 MAX jet crashed into the Java Sea. No one survived. One month later, Indonesia's National Transportation Safety Committee released its preliminary investigative report. The inquiry identified a key problem: a faulty reading from one of the plane's two angle-of-attack sensors. The reading indicated that the plane had been ascending at an unsafe angle. The sensor triggered the jet's stall-prevention system, known as MCAS (Maneuvering Characteristics Augmentation System). The software should not have been activated, since the sensor reading proved inaccurate. Experts questioned why the MCAS had become engaged based on the reading of one sensor, particularly since angle-of-attack sensors had malfunctioned 50 times over the past five years on flights in the United States.¹ Shouldn't the MCAS have drawn upon and reconciled disparate data from the two angle-of-attack sensors? Later, former Boeing engineer Peter Lemme commented, "From the beginning it should have been a fail-safe design, which would have relied on two inputs to make sure that you weren't sensitive to one failure."² But on that Monday morning, the MCAS kicked into gear, repeatedly pushing the plane's nose down. Captain Bhavye Suneja and his co-pilot struggled to pull the plane back up. The software was too strong. Lion Air Flight 610 plunged into the water at more than 500 miles per hour.³

In the United States, where Boeing is headquartered, the Federal Aviation Administration (FAA) assessed the situation. The FAA agreed to allow the 737 MAX to continue flying despite concerns about the MCAS. The agency required Boeing to put in place two measures to enhance safety. First, the company needed to test and implement revised MCAS software within seven months. Second, Boeing would inform pilots about how to handle a situation akin to the one that unfolded on Lion Air Flight 610. The FAA informed Boeing that, "Risk is sufficiently low to allow continued growth of the fleet and operations until the changes to the system are retrofitted."⁴ When Boeing issued the safety bulletin to the airlines, some pilots expressed dismay. Captain Dennis Tajer, union spokesperson for American Airlines pilots, remarked, "Before the crash we were not provided any information on the MCAS or even its existence."⁵

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