Boeing outsourced software development for faulty 737 Max 8 to cut costs

By Bryan Dyne
3 July 2019

New reports by *Bloomberg* reveal that, as part of a cost-cutting measure, the aerospace giant Boeing outsourced the software development for the 737 Max 8 aircraft to recent college graduates for as little as $9 an hour. It was the plane's "fatally flawed" software that caused the deadly airplane crashes of two Max 8s, Lion Air Flight 610 and Ethiopian Airlines Flight 302, which together claimed 346 lives.

Boeing's decision to look outside the company for software development is part of a broader cost-cutting campaign which has resulted in 35,000 lost jobs since 2001. This accelerated under current CEO Dennis Muilenberg, who cut more than 20,000 employees in his first two years as senior executive of the aerospace giant.

The 737 Max 8 itself is another of Boeing's decisions to increase the profits of the company and its executives. The plane was developed and advertised as a cheaper option than the Airbus 320neo, both for its higher fuel efficiency and reduced pilot training time. To meet this claim, the company took the 50-year-old 737 frame and attached new, larger engines that caused the plane to pitch up and stall.

Rather than redesigning the airframe to properly incorporate the new engines, Boeing commissioned the Maneuvering Characteristic Augmentation System (MCAS), the software likely responsible for the two crashes. It used a single angle-of-attack sensor (not multiple, against airplane software standards) to automatically pitch the plane downward, a feature that was not mentioned in pilot manuals, and which ultimately led to the two fatal crashes.

In response to the report, Boeing immediately claimed that the contractors, employed by the Indian company HLC Technologies Ltd., were not involved in the development of the MCAS system. It also denied their involvement in a more recent software glitch uncovered by the Federal Aviation Administration that has set back the recertification of the Max 8 by at least three months.

These statements cannot be taken in good faith. Boeing itself didn't consider MCAS a critical system for the Max 8, suggesting that the system's development might have been relegated to contractors. Moreover, as former Boeing employees note, the company was doing everything it could do rush the Max 8 into production, including "moving work from Puget Sound, because we'd become very expensive here," according to Rick Ludtke, an engineer laid off in 2017, referring to the cost of Boeing's own software engineers.

Another comment, from former Boeing engineer Mark Rubin, noted that in 2015, "a room full of a couple hundred mostly senior engineers…were being told that we weren't needed" because the software didn't need further development.

The contract with HLC was also a financial boon for Boeing. In 2005, it secured an $11 billion order from Air India in exchange for a $1.7 billion investment by Boeing into Indian companies, including HLC. This was a critical step in Boeing's ongoing battle for market share with European-based rival Airbus in the rapidly expanding Asian aerospace market.

The revelations about Boeing's software development practices come alongside new reports of an expanded Justice Department investigation into the company's previous flagship aircraft, the 787 Dreamliner, which was grounded in 2013 after its lithium-ion batteries caused fires while the jets were in flight. In addition to reviewing the two crashes, federal officials are also looking into accounts of cost cutting at its manufacturing plant outside Charleston, South

Carolina as well as “hallmarks of classic fraud.”

These stem from the frenzied pace of production Boeing has imposed on the plant’s workforce, causing safety lapses including debris left uncleaned and tools left in engines. On several planes, slivers of metal have been discovered near cockpit and flight control wiring, risking a loss of control during flights. While the Dreamliner has never crashed, these sorts of errors have the potential, in the words of one Boeing whistleblower, to be “catastrophic.”

Another revelation is the discovery that a critical fire-fighting function on the Dreamliner does not always work, forcing Boeing to issue a warning that a switch designed to automatically fight fires sometimes failed. Despite the agency’s warning that “the potential exists for an airline fire to be uncontrollable,” it only mandated that airlines check that the switch works once a month and did not issue an order to ground the plane. It is another in a long list of choices the FAA has made in favor of Boeing’s profits over human lives.

While the 787 investigation will not likely produce any major consequences, any threat to Boeing’s previous crown jewel aircraft hangs like the sword of Damocles over the aerospace giant. Since its launch in 2011 and the development of the 787-8, -9 and -10 variants, it has built 840 planes and has another 1,441 on order. If all the orders for the 787 were canceled, the company would lose approximately $400 billion in sales, in addition to the potential losses of $92 billion if all Max 8 orders are reversed. There is a very real risk of Boeing’s bankruptcy if either scenario is realized.

Such fears are no doubt circulating among Boeing’s leadership and its stockholders. The company’s stock has fallen 20 percent since the Ethiopian Airlines crash, reducing the company’s value by more than $47 billion while the groundings have so far cost a further $1 billion. Three class-action lawsuits have also been initiated against Boeing, including from stockholders, pilots and the crash victims’ families, all claiming restitution for the company’s lies and negligence.