The New York Times | https://www.nytimes.com/2020/11/24/sunday-review/boeing-737-max.html

NEWS ANALYSIS

Boeing's 737 Max Is a Saga of Capitalism Gone Awry

A corporate culture that privileged profits over safety had terrible consequences.

By David Gelles
Mr. Gelles is the Corner Office columnist and a business reporter for The New York Times.

Nov. 24, 2020

After a Boeing 737 Max jet plunged into the ocean off the coast of Indonesia in October 2018, killing all 189 passengers and crew members aboard, Boeing quickly diagnosed the problem: faulty software. The company immediately promised to fix the code, reminded pilots how to handle a potential malfunction and insisted the Max was safe.

And yet, less than five months later, another 737 Max crashed, this time in Ethiopia. Once again, the new software — known as the Maneuvering Characteristics Augmentation System, or MCAS — was identified as the culprit. With a total of 346 people now dead, the Max was grounded worldwide, plunging Boeing into its biggest crisis ever.

Last week, the Federal Aviation Administration cleared the Max to fly again, bringing to an end the longest grounding of a commercial jet. But the saga has shattered Boeing's once-sterling reputation. As an avalanche of investigations and reporting over the past 20 months made clear, the true cause of the crashes wasn't faulty software. It was a corporate culture gone horribly wrong.

"The Boeing Company for a good part of a century was the foremost and best airplane manufacturer in the world, but they got infected," Representative Peter DeFazio, chairman of the House transportation committee, which led an investigation into the crashes, told me. "They started watching Wall Street. They started tying executive bonuses to stock performance. It was greedy executives doing shortsighted things to pad their pockets."

What made the crashes so vexing is that it was impossible to pin the blame on one central villain. Instead, the whole company seemed to be at fault. Time and again, Boeing executives and engineers didn't take warning signs seriously enough, opted against adopting additional precautions and made decisions for the sake of saving money or raising profits.

The new software, which had the power to repeatedly push down the plane's nose, relied on only one sensor. That gave the Max a single point of failure, a cardinal sin in aviation engineering, an area where safety redundancy is usually built into every system. In both crashes, that single sensor failed, causing the software to go haywire.

The risks were evident early on. During the development of the Max, Boeing employees concluded that if pilots didn't respond to MCAS within 10 seconds, it would be "catastrophic." Boeing considered, then abandoned, the idea of adding an alert for MCAS activation to the cockpit of the Max. At least one employee raised the question of whether having MCAS rely on a single sensor made the plane more vulnerable.

Boeing nevertheless made MCAS more powerful and left it uniquely prone to malfunction. The company also failed to inform pilots about the new software, and pressured the F.A.A. to remove mention of MCAS from the Max's training manual — moves that helped Boeing avoid costly retraining on simulators, and made it more appealing to airlines.

When it came time to build the Max, chaos reigned on the factory floor. "Frankly right now all my internal warning bells are going off," one manufacturing employee told an executive in 2018, describing an exhausted work force that was making too many mistakes. "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."

Some Boeing employees harbored a disdainful view of regulators and colleagues alike. In internal company messages released as part of investigations into the crashes, one Boeing test pilot described his F.A.A. counterparts as "dogs watching TV." In another exchange about the Max, an employee wrote to a colleague, "This airplane is designed by clowns, who are in turn supervised by monkeys." Yet another employee wrote, "I don't trust many people in Boeing."

Boeing's failings continued once the Max entered service, in 2017. That year, company officials learned that a cockpit warning light that could have helped the pilots on the Indonesia and Ethiopia flights identify an MCAS malfunction wasn't working in most planes. But the company didn't inform the airlines.

And even after the crashes, Boeing executives, including the chief executive, Dennis Muilenburg, suggested that poorly trained foreign pilots, not the company, were to blame.

No single one of these transgressions was directly responsible for the crashes. But the cumulative effect was fatal. A company that once prided itself on safety above all else had abdicated its responsibility to the traveling public.

How could something like this happen at Boeing?

The company is an American icon. It helped usher in the age of commercial aviation and produced planes like the 747. Boeing's World War II-era bombers were built in the factory where the Max was born. Boeing engineers helped NASA put men on the moon. The company builds Air Force One, the F-15 fighter jet, the Apache attack helicopter and more.

Yet in recent decades, Boeing — like so many American corporations — began shoveling money to investors and executives, while shortchanging its employees and cutting costs.

The changes began in 1997, when Boeing took over its chief domestic rival, McDonnell Douglas.

Led by Harry Stonecipher, McDonnell Douglas was a company that prioritized boosting share price as much as making airplanes. Mr. Stonecipher was an alumnus of General Electric and had learned under Jack Welch, the profit-obsessed chief executive who made G.E. the most valuable company in the world through merciless downsizing and financial engineering.

When Mr. Stonecipher became chief executive of Boeing in 2003, he brought G.E.'s model with him: He slashed costs, reduced head count, ramped up outsourcing and increased Boeing's share buyback program and shareholder dividends.

"When people say I changed the culture of Boeing, that was the intent, so that it's run like a business rather than a great engineering firm," Mr. Stonecipher said in 2004.

Boeing moved its corporate headquarters to Chicago in 2001, lured by tax breaks and distance from its unionized work force near Seattle. When it came time to build the 787 Dreamliner, Boeing constructed its new factory in South Carolina, which had no aviation work force and little organized labor. Quality at the Dreamliner factory soon suffered.

In 2011, Boeing learned that American Airlines, one of its most important customers, was poised to place a major order for new jets with Airbus. Boeing had been considering designing a new midsize passenger jet, but the threat of losing out on the American deal forced the company's hand.

Boeing decided to redesign the 737 — a plane that was introduced in 1967 — once more. To make the new Max more fuel efficient, Boeing needed bigger engines. But because the 737 was an old plane that sat low to the ground, those engines needed to be mounted farther forward on the wings, changing the aerodynamics of the plane. To compensate, Boeing introduced the ill-fated MCAS.

And even when the company knew that the software had caused the first crash, Boeing kept the Max flying until another plane fell from the sky.

"The second crash was corporate manslaughter," said Zipporah Kuria, whose father, Joseph Waithaka, died in the Ethiopia crash. "If they had grounded the plane after the first crash, my dad would still be here."

This March, my reporting partner, Natalie Kitroeff, and I interviewed Boeing's new chief executive, another Welch protégé, Dave Calhoun. He appeared to hint that the pilots of the two doomed flights might have mishandled the software malfunction, and said the messages in which Boeing employees denigrated the F.A.A. and ridiculed their own colleagues were not reflective of a rotten culture. "I see a couple of people who wrote horrible emails," he said.

It seemed that inside Boeing, little had changed.

Then, not long after our conversation, the coronavirus pandemic ground air travel to a halt. Airlines around the world canceled orders for hundreds of Max jets. Boeing laid off tens of thousands of employees and sold its corporate yacht, a symbol of corporate excess, for $13 million.

In March, the company extended a pause of its stock buyback program, stopped issuing dividends and cut executives' salaries. Over the course of the year, Boeing implemented sweeping new policies to improve engineering oversight, promote transparency and encourage employees to flag safety concerns. There is even chatter that Boeing might sell its headquarters in Chicago, potentially setting the stage for a return to Seattle. The pandemic, it seems, is doing what the Max crisis couldn't, and Boeing is finally demonstrating some humility.

Such changes might make Boeing more closely resemble the company that for so long embodied American ingenuity. But the true measure of change inside Boeing will be how its executives and engineers behave in the years ahead. Will they put safety first? Will they respect their regulator? Will they speak up when something seems off? Until all that happens, nothing will have really changed.

"It has been a tragic couple of years," Michael Huerta, who was the F.A.A. administrator when the Max was certified, told me. "The best we can hope for is that they're applying what has been learned, and that aviation will be safer in the future."