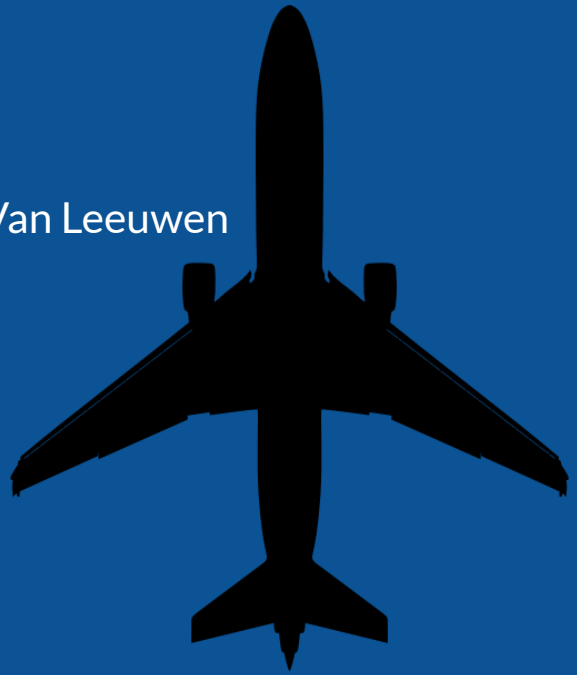
Boeing 737 Max

Carlos Avalos, **Aubry** New, **Shay** Vant Hul, **Kylie** Van Leeuwen & **Ellie** Mezak



Background

- In 1916, William Boeing built the 1st hangar in Seattle, WA.
- First few decades, Boeing focused on producing planes for the US military and postal delivery.
- First passenger jet in the late 1950s, the 707 featured 4 engines, carrying more than 150 passengers.
- Jack Steiner, the father of the 727, developed the 737.
- Two decades later, the 737 was ranked the best-selling jet in commercial aviation history.
- In 1997, Boeing purchased McDonnell Douglas for $13.3 billion in stock, the main competition.
- By 2018, Boeing had generated over $100 billion in revenue and achieved a stellar record for safety over the years prior to October 29, 2018.

Rush to Build: Cutting Corners

- 60% of parts were reused from the Boeing 272 rather than developing new parts and technologies.
- Jack Steiner, chief engineer, went to the board of directors secretly before a board meeting to gain support to develop the new plane when CEO William Allen was not convinced.
- Managers down-played changes to the plane compared to the 727 model to avoid expensive and timely training for pilots -> pilots were unaware of the MCAS software in the planes.

Shift in Management

- Physical move of headquarters from Seattle to Chicago.
- Stonecipher valued performance over community atmosphere.
- Low morale due to layoffs.
- Engineers did not feel heard when presenting their ideas and concerns to management.
- New top managers did not have engineering backgrounds, which contributed to a lack of communication between management and engineers.

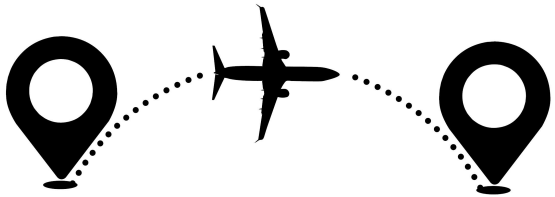
Misleading Factors

- When Boeing was in the process of revealing the work on a new generation of the 737, they promised that the 737 MAX would be 8% more fuel efficient than the Airbus A320neo.
- However, engineers faced several major challenges and were eventually unable to get the 737 MAX to be 8% more fuel efficient.
- And after the crash, Boeing followed up speaking on the crash and actually stated that the reason for the crash was the pilots, because they were relying on the jet's auto mode, but they should have known how to react to a situation like this.
- “Many pilots relied extensively on automated systems, and they simply did not have the ability to intervene effectively when technology failed”- Langewiesche

Technical Failures

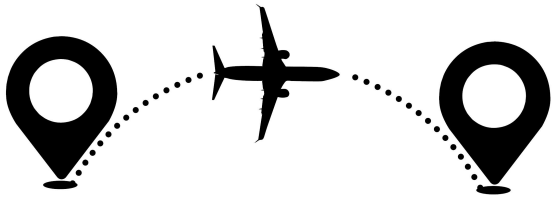
- MCAS software was activated when it shouldn't have been, which caused the nose of the planes to dive downward.
- Pilots could not fight it because the software was so strong.
- The software is triggered by a single sensor, rather than requiring consistent data from multiple sensors.
- A similar scenario demonstrated that with minimum training and awareness, pilots would be able to shut down the system by flipping the cutout switches.

Discussion Question #1



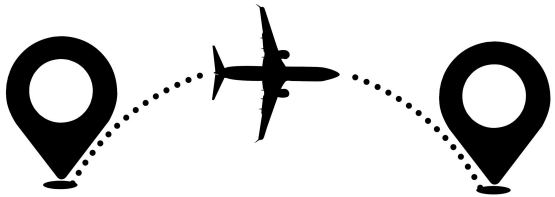
What could Boeing's leaders (including CEO Dennis Muilenburg, his management team, and the board of directors) have done to prevent this crisis?

Discussion Question #2



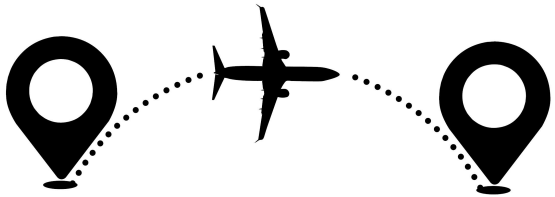
How did the organizational culture at Boeing contribute to the crisis?

Discussion Question #3



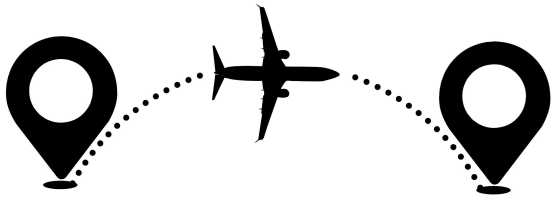
What were the most significant causes for these two Boeing 737 Max crashes?

Discussion Question #4



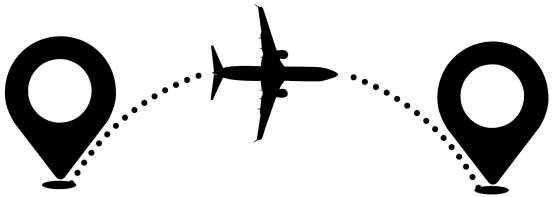
How did Boeing’s mistakes affect their brand's trustworthiness?

Discussion Question #5



What would you do if you were an engineer and your safety concerns weren’t being heard by management?

Discussion Question #6



Do you think they can regain trust as a company?

How Boeing has improved now

New management David L. Calhoun

Looking ahead, Boeing is focused on driving stability and making the right investments to ensure we are well-positioned for future growth. With safety at the forefront, our effort to stabilize our production system, including the supply chain, and improve our delivery predictability, remain important priorities as we continue to invest in our people, technology, manufacturing capabilities, and strategic partnerships.

https://s2.q4cdn.com/661678649/files/doc_financials/2021/ar/The-Boeing-Company-2021-Annual-Report.pdf

737 MAX 2021 MILESTONES

Global regulators and aviation organizations from around the world collaborated to allow the airplane to safely return to service.

JANUARY

- European Union Aviation Safety Agency (EASA) and U.K. Civil Aviation Authority approvals for 737 MAX return to service

FEBRUARY

- Air Canada, United Airlines and TUI return 737 MAX to service
- UAE General Civil Aviation Authority approval

MARCH

- Australia Civil Aviation Safety Authority approval
- Alaska Airlines introduces 737 MAX into service
- Southwest Airlines returns 737 MAX to service
- Investment firm 777 Partners orders 24 737-8s
- Southwest Airlines orders 100 737-7s and 737-8s
- Federal Aviation Administration certifies 737-8-200

APRIL

- EASA certifies 737-8-200
- flydubai and Turkish Airlines return 737 MAX to service

JUNE

- Flair Airlines introduces 737 MAX into service
- 737-10 first flight
- Ryanair introduces 737-8-200 into service
- United Airlines orders 200 737 MAX airplanes

AUGUST

- India Directorate General of Civil Aviation (DGCA) approval

SEPTEMBER

- Civil Aviation Authority of Malaysia approval
- Civil Aviation Authority of Singapore approval

NOVEMBER

- Akasa Air orders 72 737 MAX airplanes
- SpiceJet returns 737 MAX to service
- South Korea Ministry of Land, Infrastructure and Transport approval
- Singapore Airlines returns 737 MAX to service

DECEMBER

- Civil Aviation Administration of China approval
- Indonesia DGCA approval
- Civil Aviation Authority of Vietnam approval

Questions