Paper 2 – BOEING 737 MAX PROBLEM

Student Name: Sulabh Sharma

Student ID: LB68693

Course Name: ENMG 656 | Engineering Law and Ethics

University of Maryland Baltimore County

After 346 individuals died in two accidents, Lion Air Flight 610 on October 29, 2018 and Ethiopian Airlines Flight 302 on March 10, 2019, the Boeing 737 MAX passenger airliner was grounded worldwide in March 2019. Immediately, Ethiopian Airlines grounded the remaining MAX aircraft. The first national grounding was requested by the Civil Aviation Administration of China on March 11, followed in swift succession by several other aviation authorities. On March 11, the U.S. Federal Aviation Administration (FAA) officially affirmed the airworthiness of the aircraft but grounded it on March 13 after obtaining reports of parallels in the incidents. By March 18, 2019, all 387 planes, operating 8,600 flights a week for 59 airlines, were barred from operations. The grounding of U.S. airliner is the longest ever. In November 2018, Boeing announced that the MAX had a new automatic flight control system, the Maneuvering Characteristics Augmentation System (MCAS), which could force the nose of the aircraft down repeatedly. Any mention of the device in the aircraft manuals was omitted by Boeing. Boeing and the FAA sent airlines urgent notes a week after the first crash, stressing a protocol to recover from a malfunction. Boeing deflected blame in a presentation to the FAA and proceeded to argue that sufficient crew action would rescue the aircraft.[4] The FAA expected that Boeing would deliver a technical upgrade to MCAS by April 2019 before the second crash.

Boeing halted production of the MAX in January 2020, with 400 aircraft pending approval and delivery, until May 2020. By March 2020, the grounding had cost Boeing $18.6 billion in refunds, lost revenue, and legal costs to airlines and victims ' families. By September 2020, months after the COVID-19 pandemic, airlines and leasing firms that once struggled without the MAX had canceled almost 800 orders from the MAX. Boeing completed several days of qualification flights on July 1st. Details of improvements relating to aircraft defects and pilot training to be mandated before the MAX returns to service, due no earlier than mid-October 2020, were released by the FAA in August.

Assessments and experiments from numerous outlets have raised questions with respect to
Plan, manufacturing, and deployment of MCASs by Boeing, as well as the lack of
Pilot and personnel planning and preparation in the presence of pilots and teams
Aircraft, what to take part in, and what to do in the event of their presence. In the next inquiry, several other problems were found, but cross-cutting one of the others was behind all the others,

such as absence or preparation, repair, and protection Measurement Action. The article in the New York Times reports that researchers at the crash site of Ethiopian Airlines proof has been discovered that the aircraft's stabilizers are angled upwards and the aircraft had been driven down by the stabilizers. Potentially, proof shows that the two planes faced same issues because of the recently built automation machine had problems [6]

Only when one of the two aircraft sensors on the outside signals that the nose is too high would turn the automatic system, which could have pushed the aircraft down in the Lion Air crash. That means that, as seen by the Lion Air crash, a single sensor that does not work properly will force the aircraft in the wrong direction. A night before flying from Denpasar to Jakarta, the plane had identified some issues, which were seen in local media interviews, but engineers had managed and repaired these problems to make the flight fly for the next day. The aircraft was purchased by Lion Air in August and just 800 hours had been flown, said Soerjanto Tjahjono, chief of the National Transport Safety Committee (NTSC). [2]

The key stakeholders may be the project teams participating in the project where these flights are structured, controlled and conducted responsibly. They could contain Pilots, business employees, administrators who possess decision-making rights. Primary Stakeholders also include all passengers embarked on aircraft educated by staff and in the accident, all the passengers lost their lives. The company's stakeholders may include both aspects in the national and world aviation sector. Sources in the newspapers who were Responsible for reporting all the news and information of the event, the spectator, and other entities. The secondary owners were those that were directly or indirectly linked to the passenger. The carrier itself will be a secondary stakeholder, as they would face Questions concerning their business's image, which were at stake because of the loss.

For the accident that was attributed to it, there are also related problems that have been found in relation to the automatic flight scheme. It was expected from company to learn from the previous errors to prevent the second crash. But the stuff proceeded in the wrong direction from Starting. It should be detected when a malfunction like an automatic device problem is detected and should be handled with high priority, but in such unethical fashion, the issue was not taken seriously. The Federal Aviation Authority and Boeing appear to accept the 737 Max Security for aircraft. The

organization however intends to complete and evict the software change by April in which they plan to upgrade applications that can modify and upgrade the jet functions around the jets network of automation.

The BBC was informed by a former engineer, after a New York Time survey found that project was not funded properly which can cause substantial cross-cutting for total activities financed during production. About this cross cutting, Adam Dickson, who was a Boeing engineer, also added that the manager of his team was under pressure to cut costs and downplay new features which was a major problem once again on the aircraft. No protection should be compromised or overlooked in certain circumstances because of any expenditure cap. [5] The two collisions notwithstanding, neither Boeing nor the FAA are of the view that they did something wrong. Boeing spokesman said the company maintains that the system is" “a robust and effective way for the FAA to execute its oversight of safety” [7]. A spokesman is responsible for listening to all the remarks from others and reply accordingly.

No security should be violated or ignored under any budget constraint under any circumstances. [5] Despite the two crashes, neither Boeing nor the FAA believes they have done anything wrong. A Boeing spokesperson said the company believes the system is still “a robust and effective way for the FAA to execute its oversight of safety.” [7] This attitude should be changed to make the system credible for others. It is a responsibility of a spokesperson to listens to all the comments from others and respond accordingly. Late in the development of the Max, Boeing decided to distribute MCAS to ensure a smooth operating a plane. A single sensor and the latest, riskier concept are based on a single sensor and could push the aircraft down even further. This invention has been withheld from the government agencies that could call for more specifications. Boeing has not had requested for any study for standardized MCAS so that F.A.A. laws were not required. The department representative, the regulator 's innovation test pilot, was aware of the reforms but his task, however, was to decide how the aircraft was flown and not to assess Security.

Organizations need to maintain consistent and separate lines of interaction between the ground workers and other workers with decision-making rights. The Boeing 737 Max should broaden its engine in front of its wings which will further improve the clearance of the field. The Boeing

altered when doing so the way the aircraft should perform when the thrust is applied to the engine.[4] The exact situation of the Boeing 737 Max belonging to Lion Air was described in the report, which Suddenly started to vibrate the stick shaker caption side. The primary aim of these Shakers was to alert pilots of an inevitable stall that could lead to a risky failure. But as the flight usually sailed, the caption missed this disturbing thing.[7] There was a potential to stop this tragedy if they responded to this call seriously. It was clear after both accidents that the flight control system known as MCASS was known as enabled at the wrong time, pulling the aircraft's nose downwards while the aircraft is running climbing was supposed to be. This was achieved as the pilot relied on data from a single source. A sensor that seems to have failed on the two aircraft. [8] If more pilots were made aware about to handle new technologies such as MCAS this situation would have been prevented.

After those circumstances, the strongest regret was that it could have been stopped if the Scenarios were little different and were considered. They did not fully comprehend it, the automated system that helped to send the aircraft into a nose-dive, killing everyone. There is a chance to prevent it if the workers might have been given the appropriate instruction. MCAS software was permitted to be used, but it was proven after investigation that the software was risky. [4] There was another major issue that was found that for years, the regulator has handed on repetitive duties to suppliers. If the company had pursued all the stuff in ethical manner with right approach would have seen a much clearer view of the Boeing 737. Security checks and maintenance operations that were to be carried out were required. Boeing has kept several other firms unaware of the MCAS programs. [1]

The Boeing has already begun relying more on security preparation after the accidents. The suggestion is that pilots receive simulator testing prior to grounding the aircraft about the security features associated with new software. Boeing should be more open to get its software tested by government agencies, so that their image and reputation can be restored, and customer trust can be built all over again. FAA should be stricter about certifying any plane to fly, they should set up proper guidelines and expectations which should be meet by the manufacturer before they make that plane Flyable again. Boeing should get their software tested by there inhouse team and by some third-party vendors just to see if the work which they have done is right or not. They should

do rigorous testing of such software before deploying it for commercial use. Government agencies should test every possible scenario of that software so that incidents like these can be avoided in the future. Boeing should be allowed to manufacture this plane again only when they pass on every trust set by agencies, government, there teams and by their customers.

References:


1. https://www.cnn.com/2018/10/28/asia/lion-air-plane-crash-intl/index.html
2. https://www.nytimes.com/2019/07/27/business/boeing-737-maxfaa.html?action=click&module=Top%20Stories&pgtype=Homepage
3. https://titangrey.com/boeing-737-max/
4. https://www.theverge.com/2019/3/22/18275736/boeing-737-max-plane-crashes-groundedproblems-info-details-explained-reasons
5. https://www.forbes.com/sites/isabeltogoh/2019/07/29/ex-boeing-engineer-says-workerswere-pressured-to-keep-costs-down-amid-737-max-grounding/#ff651f42e9a9
6. https://www.vox.com/2019/3/16/18268646/ethiopian-airlines-lion-air-boeing-737-similarities
7. https://www.theverge.com/2019/5/2/18518176/boeing-737-max-crash-problems-humanerror-mcas-faa
8. https://www.bbc.com/news/business-51153286
9. https://www.cnbc.com/2020/01/07/boeing-reco