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Continuing Education Course #511
Ethics, Competition, Regulation -
The Case of the Boeing 737 Max Failures

1. The 737 Max crashes could not have been pilot error because:
 - a. The system that was controlling the flight of the planes could not be turned off
 - b. Pilots received no training with regard to the system that was controlling the flight the planes at the time of the crashes
 - c. The system was not listed in the technical manual on board the planes
 - d. All of the above
2. The view that Boeing "certified itself" in the 737 Max case could be seen as backed up by the fact that:
 - a. Boeing employees conducted the certification reviews under the FAA
 - b. Boeing determined which of its employees would conduct the certification reviews
 - c. The section of the FAA conducting the certification reviews was called the Boeing Aviation Safety Oversight Office
 - d. All of the above
3. The Department of Justice (DOJ) found that Boeing was guilty of a "lack of candor" regarding the Maneuvering Characteristics Augmentation System (MCAS) with FAA regulators, but that the misconduct at Boeing was:
 - a. Not pervasive across the organization
 - b. Not undertaken by a large number of employees
 - c. Not facilitated by senior management
 - d. All of the above
4. Engineers were held accountable by the Department of Justice (DOJ) in the 737 Max case for not informing FAA regulators of an important change to the MCAS system that allowed the system to significantly alter the flight of aircraft at low speeds.
 - a. T - The DOJ determined that engineers who designed and implemented the changes should have come forward and made the FAA aware of those changes
 - b. F - The only employee charged by the DOJ was the Chief Technical Pilot who the DOJ asserted was made aware of the changes yet withheld that information from the FAA. The pilot was acquitted of having such knowledge at trial.
5. According to a 2015 DOJ survey, many Boeing employees participating in the certification of Boeing projects for the FAA felt:
 - a. "Undue pressure" from Boeing regarding the certification process
 - b. "Just the right amount of pressure" rom Boeing regarding the certification process
 - c. "No pressure at all" rom Boeing regarding the certification process
 - d. "Extraordinary pressure" from the FAA to scrutinize Boeing projects
 - e. All of the above
6. After a DOJ investigation into the two 737 Max crashes, the following internal changes were made at Boeing:
 - a. A committee of the Board of Directors was created to oversee Boeing's policies governing safety and the company's interactions with regulators

- b. Boeing engineers (as well as Boeing's Flight Technical Team) were directed to report through Boeing's chief engineer rather than through the business units
- c. The supervision and "professionalism" of Boeing's Flight Technical Pilots was increased
- d. All of the above

7. Boeing was fined by the DOJ for initially publicly claiming that pilot error was the likely cause for the Lion Air crash.

- a. T - The DOJ cited the NSPE code of ethics section on making public statements "in an objective and truthful manner" in levying its fine against Boeing
- b. F - The DOJ investigation did not focus on Boeing's statements to the public at large, only the information it provided during the regulatory certification process

8. The following changes were made with regard to the MCAS system for recertification:

- a. The system would not repeatedly alter the trajectory of the plane after an initial pilot reaction
- b. The system would use two sensors, instead of one each, to determine flight speed and angle
- c. If the sensors for air speed or flight angle disagreed, the pilot would be notified and could disable the system
- d. All of the above

9. Pilots are still not required to undergo training on the MCAS system

- a. T - The system is now seen by regulators as intuitive and foolproof
- b. F - Extensive training is now required for pilots who will be flying aircraft with MCAS systems installed on board

10. The recently revised American Society for Civil Engineering (ASCE) code of ethics differs from the National Society for Professional Engineering (NSPE) code of ethics in that it:

- a. Takes a stakeholder approach to considering engineering decisions
- b. Provides a hierarchy among stakeholders affected by engineering decisions
- c. Explicitly states the protecting the health, safety, and welfare of the public takes precedence over all other responsibilities
- d. All of the above

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