Nathan Garcia

1. In three to four sentences, summarize what caused the failure of American Airlines Flight 965.  
     
    The failure of American Airlines Flight 965 was caused by the human error of the flight crew. They failed to navigate the plane appropriately to the runway, and failed to stop the flight path when faced with problems. The flight crew also made reckless decision making in refusing to delay the flight for safety, and had lack of resources and knowledge to assess the situation of the flight during critical phases.
2. List five major groups impacted by the crash and describe how they were impacted.  
     
    1. The flight crew and passengers on the plane, who were directly affected through death or injury.  
    2. The crew and passengers family, who were affected by those who died from the tragic crash.  
    3. American Airlines, owners of the plane and employed the flight crew. They took a lot of the blame for the accident as the flight crews actions were a direct extension of theirs.  
    4. The U.S. FAA represents regulation and safety for U.S. aviation, and was given safety recommendations after the crash.  
    5. International Civil Aviation Organization, who ensure safe travel for international air navigation, were also given safety recommendations after the crash so that future aviation travel would not have the same situations happen again.

Jubril Somide

3. Software was only one factor that contributed to the crash of Flight 965. What are three other contributing factors? How did each of these contribute to the incident? (3 marks)

a) Weather conditions were also a factor in the crash, because there were thunderstorms and also turbulence by the time of the accident. This is why these weather condition complicated the crew’s ability to maintain situational awareness and in the navigation process. So such conditions could lead to turbulence and reduced visibility which increases the risk of accidents.

b) Communication issues were also a contributing factor to the accident causing multiple breakdowns. There was misunderstanding and misinterpretation of some of the traffic control instructions that contributed to the deviation of the initial flight path

c) Fatigue of the crew and the internal clock being disrupted of the crew was also a contributing factor because they were operating on a long international flight that was going through multiple time zones. So these circumstances with affect the crews alertness and decision making abilities.

4. In three to four sentences, summarize the software problem that contributed to the crash. (2 marks)

According to the articles the main problem that contributed to the crash of the airline was the inertial navigation system(INS). The management of the flight used outdated and navigation information that was inaccurate which could lead ti the miscalculation of the aircraft's position mainly because of the bombing that had happened previously. This software issue played a pivotal role in leading the aircraft to veer off its intended flight path and then collided with a mountain resulting in a tragic crash.

Kyler Axten

5. What is one test that should have been performed on the software that might have eliminated or reduced the impact of the software on the crash? (Kyler)

I think the most detrimental test to the issue at hand would have been a test on Integration Testing. Despite many issues arriving from the lack of Dynamic testing and White box testing, if more tests were to be run on Integration of the database software across planes, such issues would not arise from how the beacons were listed and confusion across how most flight databases are initialized would not occur.

6. What two changes could have been made to the software that might have eliminated or reduced its impact on the crash? (Kyler)

Automatic Software features

If the software were to automatically retract its speed brakes, the plane would have risen at an altitude fast enough to clear the mountain. It's a small detail to assign to the plane's computer software but shown by this flight, could save catastrophic events. Speed brakes being used for slowing down the plane during lowering altitude have no reason to be used during ascending or pulling the plane hard up. As the flight of 965 assumed they were landing the speed brakes were on for descent, yet as we know, suddenly the plane was operated to raise exponentially fast to avoid a crash. It has been noted that if flight 965 were to have its speed brakes automatically retracted on ascending, they would have cleared the mountain and the crash of 965 may have never happened.

The database method of listing routes

A major downfall of the flight of 965 was once the flight operators entered R for Rozo into their database, the most common major city of R for Romeo was automatically put to the top of the database list and even followed the same radio frequency of 274 kilohertz. These 2 attributes made the two beacons nearly impossible to distinguish. If planes nationally were to follow a globally distinguished system of how flights list their databases, this could have been prevented. An example is how the flight operator assumed Rozo would be first as most databases setup follow a rule of putting the closest beacon to the top of the list, yet the way the database was setup that flight 965 was on referenced to the closest biggest city, Romeo, furthering the confusion of the flight operators as in the database, full names are not listed but rather just the abbreviation of “R”.

Keegan Mclean

7. What issue do you feel was the greatest contributor to the crash? (If the issue did not exist, the plane would never have been in a situation where the GPWS was activated.) (1 mark)

The biggest thing that caused the crash was the pilots trying to change the flight procedure because of the miss communication.

8. In three to four sentences and based on your answer to the previous question, why do you feel this issue was the greatest contributor to this crash? (2 marks)

Because of a slight difference between Colombian and American standard terms the pilots put pressure on themselves to change procedures. This caused every other issue afterwards to snowball. Their tunnel vision caused them to lose rack of where they are and them miss inputting the database coordinates. I believe this issue was the biggest as it was the catalyst for everything else to spiral. If this was clearer or attempted to be clarified, then none of the issues that contributed to the crash would have happened.