

Example of term paper on aircraft accident

[Engineering](#), [Aviation](#)



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Introduction

Pilots and their passengers experience physiological challenges when they are subjected to environment and the stresses of the flight. Thus, these physiological challenges are the ones that lead to the occurrence of aircraft accidents. It is interesting to note that human physiology is actually evolutionarily modified to be efficient up to roughly 12, 000 feet above the sea level. In real sense, this is essentially the limit of physiological efficiency zone. For that reason, outside this zone, the physiological compensatory mechanisms might fail to cope with stresses of altitude. The objective of this paper is to scrutinize an aircraft accident. It starts by summarizing the accident and then analyzing it in a physiology manner.

Summary

Cirrus SR22-GTS had an airborne loss of aircraft control in the course of a cruise flight. This personal flight was operated by private pilot who was foreign certified under 14 Code of Federal Regulations (CFR) Part 91 provisions and also under the visual flight rules. There was no filed flight plan hence the visual meteorological conditions are the ones that prevailed. The

pilot and 2 passengers were not injured, but aerodynamic forces damaged the airplane substantially. At 2. 00 pm the airplane faced clear air turbulence, bounced once and after losing the altitude, it hit a hard bounce of turbulence that was severe. The pilot slowed it down to around 90 knots and landed at Telfair-Wheeler Airport, (MQW) airport after noticing that the airplane had been damaged on its wings.

Analysis and discussion

This accident was therefore contributed by the pilot experiencing a condition called hypoxia. In simple terms, this is deficiency in amount of oxygen, which reaches the body tissues. The deficiency of oxygen in the high altitude resulted to inadequate oxygen amount in the blood hence the oxygen that was reaching the body tissues was inadequate leading to a state called oxygen starvation. Thus, the pilot experienced different types of hypoxia. For instance, he experienced diffusion hypoxia or anoxic hypoxia. This was caused by inadequate oxygen that was received by the lungs (Reinhart 18). He also experienced anemic hypoxia, a condition where the decrease in hemoglobin concentration led to reduction in the supply of oxygen to his tissues. Stagnant hypoxia is the other type of hypoxia that he experienced. This was caused by the decrease in flow of blood, which carries the oxygen in the body. Finally, he experienced histotoxic hypoxia that was caused by the defect in extraction of oxygen from circulation by body tissues. For that reason, the different types of hypoxia that the pilot experienced led to hyperventilation as his body attempted to increase the rates of breathing. This caused excessive expulsion of the circulating carbon dioxide, which resulted to panic attacks. Panic attacks are actually the periods of

apprehension or intense fear that are of abrupt onset hence this led to the occurrence of accident as the pilot was not functioning normally. The accident was also caused by the altitude induced decompression sickness that was experienced by the pilot and his passengers as a result of exposure to high altitude in their inadequately pressurized airplane (Reinhart 48). Albeit oxygen percentage in atmosphere remained about 21%, there was rapid decline in the atmospheric pressure with the increasing altitude. The other factor that contributed to this accident was loss of the hearing acuity as a result of adverse effects on the middle ear of the pilot, which was caused by pressure changes. Thus, this made the pilot not to hear when the accident was about to occur. The accident may have also been contributed by fatigue. Therefore, this fatigue combined with the low oxygen pressures might have induced disorienting and strong visual illusions that contributed to the occurrence of the accident.

We are also told that during recovery, this airplane sustained positive " G" loading of 4. 733 vertical Gs. This is actually above the recommended positive G loading of 3. 8 Gs. The high speed that the pilot was operating at subjected them to high gravitational (" g") forces. Thus, the increased gravitational forces forced the blood out of circle of supplying the arterial blood to pilot's brain. As a result, loss of oxygenated blood to his brain ultimately caused him to lose his peripheral vision field (Evans et al 78). The higher forces thus caused temporarily unconsciousness periods to the pilot hence this contributed to the occurrence of the accident.

Conclusion

Works cited

- Evans, Paul, Laurence E. Morehouse, and Smith W. Ames. Aviation Physiology. Los Angeles: Air Science Associates of Southern California, 2001.
- Reinhart, Richard O. Basic Flight Physiology. New York: McGraw-Hill, 2000.