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Analysis of the Unmanned Aerial Vehicles' Incidents and Accidents: The Role of Human Factors

Authors : Jacob J. Shila, Xiaoyu O. Wu

Abstract : As the applications of unmanned aerial vehicles (UAV) continue to increase across the world, it is critical to understand the factors that contribute to incidents and accidents associated with these systems. Given the variety of daily applications that could utilize the operations of the UAV (e.g., medical, security operations, construction activities, landscape activities), the main discussion has been how to safely incorporate the UAV into the national airspace system. The types of UAV incidents being reported range from near sightings by other pilots to actual collisions with aircraft or UAV. These incidents have the potential to impact the rest of aviation operations in a variety of ways, including human lives, liability costs, and delay costs. One of the largest causes of these incidents cited is the human factor; other causes cited include maintenance, aircraft, and others. This work investigates the key human factors associated with UAV incidents. To that end, the data related to UAV incidents that have occurred in the United States is both reviewed and analyzed to identify key human factors related to UAV incidents. The data utilized in this work is gathered from the Federal Aviation Administration (FAA) drone database. This study adopts the human factor analysis and classification system (HFACS) to identify key human factors that have contributed to some of the UAV failures to date. The uniqueness of this work is the incorporation of UAV incident data from a variety of applications and not just military data. In addition, identifying the specific human factors is crucial towards developing safety operational models and human factor guidelines for the UAV. The findings of these common human factors are also compared to similar studies in other countries to determine whether these factors are common internationally.

Keywords : human factors, incidents and accidents, safety, UAS, UAV
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