

SPATIAL DISTRIBUTION AND CHARACTERIZATION OF POTENTIAL AERODROME OBSTACLES ON FLIGHT SAFETY OPERATIONS IN MALLAM AMINU KANO INTERNATIONAL AIRPORT, KANO-NIGERIA

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Abstract

The safety of travelling by air is an absolute pre-requisite for air transport, as it is recognized as a very safe and fastest mode of transportation worldwide. The safety of an aircraft around the vicinity of an aerodrome during approach, take-off and taxiing around the maneuvering area is very critical and of tremendous significant in flight operations. Therefore, this study focuses on the spatial distribution and characterization of the potential Aerodrome obstacles on flight safety operations, in Mallam Aminu Kano International Airport. Electronic Theodolites was used to get the bearing of the identified obstacles (i.e. obstacles on the runway and take-off climb). Administrative map was used to identify the location of the study area and features such as roads and L.G.A. boundary. Quick Bird imagery was used to extract the fixed physical features (both manmade and natural) within the vicinity of the Kano Aerodrome and its environs in ArcGIS 10.1, using the editor tool. The location of the aerodrome obstacles was compared with the International Civil Aviation Organization (ICAO) standards and recommended practices (SARPS) by characterizing the obstacles into authorized and unauthorized obstacles. The result identified eight (8) types of obstacles which include antennas, trees, buildings, instrument landing systems (ILS), communication mast, hill, pole and concrete pillar that penetrates into different obstacle limitation surfaces within the study area. The result further revealed that 60.0% of the obstacles in (Mallam Aminu Kano International Airport) aerodrome were communication masts, 26.7% are made up of the instrument landing system (ILS). 14.8% of the obstacle constitute of trees, 3.0% of the obstructions were buildings, while antenna, concrete pillar, hill and pole contributes 1.5%, 1.5%, 0.7% and 0.7% respectively. It was also observed that there were 41 authorized obstacles, and these obstacles were found on the runway and transitional surface. On the other hand, 106 were unauthorized obstacles, most of them were found on the inner horizontal surface. Consequently, based on the findings of this study, it is recommended that Nigeria being a member state of ICAO, should as a matter of urgency be ICAO e –TOD compliant (Electronic, Terrain and Obstacles data). As this will go a long way in checking the menace of Aircraft / Obstacles collision to the barest minimum, so as to ensure regularity, efficiency and above all safety in Aviation Industry.

Keywords: Aerodrome, Flight Safety, E-TOD, Obstacles.