

Fulfilling Blind Landing Condition: Opening of a New Horizon in Aviation Sector

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In aviation, "blind landing" is the process of landing an aircraft when visibility condition is so poor that it is impossible to see the runway or use some indicators as visual reference. For safety and operational effectiveness, blind landing is necessary, especially in conditions like fog, intense rain, or snow. It makes possible for planes to land safely even in situations where ground visibility is significantly diminished. This is essential for maintaining air travel safety, avoiding detours, and enabling prompt and effective air transportation.

To enable blind landings—landings in very low visibility conditions—at Hazrat Shahjalal International Airport (HSIA), the Civil Aviation Authority of Bangladesh (CAAB) must implement several technical and operational upgrades in line with international aviation standards. The first requirement is imposed on the ILS (Instrument Landing System) installed in the airport. Currently, HSIA operates with a Category-I ILS, which supports landings with a minimum visibility of 800 meters. This is insufficient for blind landings. Upgrading to Category II or III ILS is essential, as these systems allow landings in much lower visibility conditions—down to 300 meters or even less for Category III (FAA, 2023). Blind landings require advanced lighting systems to guide aircraft safely during approach and landing. This includes High-Intensity Runway Lights (HIRL), Approach Lighting Systems (ALS), and Touchdown Zone Lights (TDZL). Apart from the above-mentioned requirements, proper coordination with airlines, ground handling and other stakeholders is also crucial.

In North America, airports such as Chicago O'Hare, Atlanta Hartsfield-Jackson, and Toronto Pearson are equipped with CAT III ILS to manage dense fog and snow conditions (IFR Magazine, 2024). European airports like Frankfurt (Germany) and London Heathrow (UK) utilize CAT III systems to maintain efficiency during adverse weather (Aviation Today, 2017). In Asia, India has made notable advancements with CAT III-B systems at airports in Delhi, Kolkata, and Bengaluru, allowing landings in visibility as low as 50 meters.

To get upgradation to Cat-II or Cat-III, proper infrastructure is to be installed. Compliance with ICAO annex 10 and annex 14 is a must. Localizer, glideslope and marker beacon must be implemented with proper redundancy and higher precision. MLS (Microwave Landing System) should also be implemented. Now someone may think, what is the difference between ILS and MLS and if there is ILS, why MLS? ILS operates in VHF range frequency whereas MLS operates in microwave range. So, the crucial advantage is that MLS is less susceptible to noise in comparison to ILS. Apart from that MLS has got a greater number of channels than ILS. So it can handle more number of aircraft at the same time. Even with this much benefits, why are we mainly considering the installment of ILS over MLS at the first place then? Firstly, ILS is used as the global standards mainly because of its existence in thousands of airports worldwide. Secondly, MLS was developed as the successor of ILS. But with the development of GNSS (Global Navigation Satellite System), MLS has fallen out of favor but as we are working for the future, coexistence of ILS and MLS might be considered. Besides the mentioned requirements, pilot training is also crucial. For CAT-III, pilots must be trained in cockpits with proper avionics (FAA, 2023).

With the ambitious vision of the interim government to get our airports upgraded to CAT-III, the main responsibility goes to the CAAB under the guidance of the ministry of Civil

Aviation and Tourism. If fulfilled, this airport may offer us huge amount of currency (both indigenous and foreign). Upgrading Bangladeshi airports to CAT-III Instrument Landing System (ILS) standards can substantially boost national revenue by improving operational efficiency and positioning the country as a regional aviation hub. At present, flight delays and diversions due to low visibility during winter and monsoon seasons result in an estimated Tk 200–300 crore in annual economic losses from lost passenger traffic, extra fuel, and missed connections. With CAT-III, aircraft can land in near-zero visibility, reducing such disruptions. The newly opened third terminal at HSIA, built at a cost of Tk 21,300 crore, will triple annual passenger capacity from 8 million to 24 million and more than double cargo capacity from 200,000 tonnes to 500,000 tonnes. This alone is projected to add millions to government and airport revenues annually through increased landing fees, passenger charges, cargo handling, and retail concessions. Additionally, national carrier Biman Bangladesh Airlines will benefit from expanded ground handling and logistics operations. With improved cold-chain cargo facilities, the country can boost agricultural exports, which were worth \$1.13 billion in FY2022-23, by ensuring timely delivery of perishables to foreign markets (JICA,2023). Combined with increased tourism, transit passengers, and foreign investment, Bangladesh could see indirect economic gains of \$1–2 billion annually from a fully CAT-III-compliant aviation ecosystem. With the third terminal construction going on, it is the most suitable time for us to dream about CAT-III.

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