

**55<sup>th</sup> CONFERENCE OF  
DIRECTORS GENERAL OF CIVIL AVIATION  
ASIA AND PACIFIC REGION**

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AGENDA ITEM 3: AVIATION SAFETY

**INNOVATIONS AND INTRODUCTION OF TECHNOLOGY  
FOR ENHANCEMENT OF SAFETY IN OPERATIONS AREA**

Presented by India

**INFORMATION PAPER**

### SUMMARY

Application of Technology has three distinctive levels of impacts namely

- (a) productive impact;
- (b) coordinative impact and ;
- (c) informative impact

offering benefits like reduction of processing time, and substitution of human labour by automated applications.

IGI airport, being one of the busiest and one of the Cat-IIIB compliant airports, is required to operate during the RVR conditions up to 50m. Low visibility condition adds to complexity of the aerodrome operations especially in terms of finding the way for follow me/ ARFF vehicles.

Also, enforcement of apron discipline and reporting of inspection findings is another area wherein processing time is avoidably high with manual means and there is scope for technological intervention to reduce the processing time.

This paper highlights the new technological application developed in house by DIAL in the above mentioned areas.

## **INNOVATIONS AND INTRODUCTION OF TECHNOLOGY FOR ENHANCEMENT OF SAFETY IN OPERATIONS AREA**

### **1. INTRODUCTION**

IGI Airport, New Delhi is one of the busiest airports in India. The airport is equipped with CAT-II/ III lighting system and licensed for operations up to Cat-IIIB conditions.

The following issues were identified wherein it was felt that there was scope for the technological intervention for enhancing the safety of operation of follow me vehicles.

#### **1.1 Follow Me Navigation during Low Visibility**

It is experienced that aircraft operating in low visibility conditions at IGIA, most of the time request for “Follow Me” guidance from runway till Apron stand and vice versa, as the chances of disorientation in low visibility due to thick fog are high.

Airside Monitoring Inspectors (AMI’s) operating follow me vehicle are trained on the airside topography and the vehicles are equipped with VHF R/T and transponder with unique identity call sign that reflects the position of respective follow me on the SMR display in ATC tower. Despite being equipped with the said equipment, it was felt that there is no real and live assistance available to the AMI regarding his own position, in real time during low visibility. The only option is to re-confirm his position from ATC in case of disorientation. The indirect information received from ATC on R/T regarding one’s own position is sometime not clear and leads to increase in R/T conversation apart from delaying the follow me service.

#### **1.2 Submission of Enforcement and Surface Inspection Reports and Raising of Penalties**

In addition to other operational duties, the Airside Monitoring Inspectors (AMI) are entrusted with enforcing the apron discipline and surface inspection of the airside areas under their allocation. The AMIs earlier were submitting the inspection reports and enforcement details manually in apron control for further processing. These reports get delayed due to the fact that some time AMIs who were assigned in the areas far from the apron control were unable to submit the manual reports immediately.

### **2. DISCUSSION**

#### **2.1 Follow Me Navigation during Low Visibility**

The low visibility conditions normally last from 2 ½ months to 3 months during the period from December to February each year. Prevalence of thick fog has been observed during these periods every year. The visibility goes down even up to less than 10m while the aircraft operations continue till reported RVR is 50m. On runway the landing guidance to aircraft is provided by ILS. However, after landing, the required navigation, till apron stand is achieved by aeronautical ground lighting and actual position of aircraft is monitored by ATC on SMR. The pilots, most of the time in thick fog conditions, request the assistance of Follow Me for guidance from runway to apron stand and vice versa.

The AMIs relies mainly on his training and experience to follow the taxi route given by ATC in thick fog. Since all follow me vehicles are equipped with VHF R/T and transponders, ATC can guide and monitor the actual position of follow me. Similarly, in case of aircraft emergency, finding the way in low visibility is difficult for CFT operators also.

Considering the sustained increase in aircraft operations YoY even during low visibility, urgent need for better technological solutions was felt.

Therefore, taking the cue from the navigation assistance systems available with modern vehicles, the option of getting a system having the live map of airside, complete with markings and position was explored.

The idea was implemented by getting the live map created on GPS monitoring device capable of presenting the live location of the vehicle on screen along with further guidance.

A total of 30 such equipment were procured and each follow me vehicle has been fitted with these equipment as part of phase-I implementation. All field trials of these equipment were successful and the maps were updated as per the requirements and comments received from the users. These navigation equipment continuously present the location of the vehicles to the operator on the map and show the further directions. These maps enable the AMI to drive on airside area even during nil visibility with full confidence without any unnecessary R/T conversation because of high precision in location indication. The idea has greatly improved the navigational capability and enhanced the safety of aircraft operations especially during the low visibility conditions.

## 2.2 **Submission of Enforcement and Inspection Reports and Raising of Penalties**

The AMIs are tasked to carry out periodic surface inspections in their assigned areas, enforce apron discipline and raise penalties against the defaulters of apron rules and regulations. Considering the vast area of the airport, there are number of follow me vehicles which are allocated with assigned area under each "Follow Me". The submission of periodic inspection reports and raising of penalties against defaulters were earlier done manually. The AMIs were personally visiting apron control periodically & used to submit the said documents manually for further processing. As a result the processing used to get delayed.

It was decided to develop an Airside application encompassing all tasks wherein the manual submission of all reports may be eliminated and all kind of reports can be submitted on line through tabs/ mobile phones.

Thereafter, a software was developed and implemented. The salient features of the software are:

- a) Submission of Daily Serviceability Report (DSR), airside area inspection report including runway, taxiway, apron & unpaved areas, Fencing Check report and AGL check report.
- b) Submission of Wild Life control DSR including availability, deployment and serviceability report on wild life control equipment.
- c) Issue of NOTAM requests
- d) Monitoring of SLAs for all vendors under airside control
- e) Raising of penalties for airside defaulters

The above submissions are possible with tabs and mobile phones available with follow me vehicles from remote locations itself.

**3. ACTION BY THE CONFERENCE**

3.1 The Conference is invited to:

- a) Take note of the contents of the paper;
- b) All other operators may like to implement the above measures at their airport.

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