International Civil Aviation Organization

The Fourth Meeting of the South Asia/ Indian Ocean ATM Coordination Group (SAIOACG/04) and the Twenty First Meeting of the South East Asian ATM Coordination Group (SEACG/21)

Hong Kong, China, 24 – 28 February 2014

Agenda Item 3: Review of Current Operations and Problem Areas

AIRPORT CDM – ADVERSE WEATHER AND FOG OPERATIONS

(Presented by Airports Authority of India)

SUMMARY

This paper presents India's effort for use of Airport Collaborative Decision Making Process in adverse conditions and fog. IGI Airport is affected severely by fog despite having CAT IIIB ILS system. Prior to year 2011 departure management after lifting fog was very difficult, since many aircraft call at the same time. Fog CDM process for departures was implemented in 2011 and since then it had resolved the issues significantly. AAI is working to enhance this process for arrival management also, in all adverse conditions; resulting in total closure of Delhi airport and subsequent resumption of normal operations.

1. INTRODUCTION

1.1. **Effect of Fog on Air Traffic:** Air Traffic on ground slows down due to reduced taxiing speed. Runway Occupancy Time (ROT) increases, significantly. For an Arrival at 2NM from T/D, Localizer and Glide Path Critical / Sensitive Areas need to be protected. All previous Arrivals and Departures shall be clear of these areas. Spacing between Arrivals and Departures increases. This increases time interval between Arrivals and Departures. As a result - **Airport Capacity reduces by 40% of the normal capacity.**

1.2. Maximum effect of fog is observed from late evening till early morning. Aircraft operations are also affected when IGI Airport and its vicinity is hit by severe Thunderstorm/ Dust storm. Other adverse conditions resulting in total closure of IGI Airport for short/ long durations may also affect aircraft operations.

1.3. Management of departures through collaborative decision making after lifting of fog (improvement in visibility conditions after total closure of airport due to reduced visibility/ RVR) is being done, since November 2011. From 2014, this process will include arrival and diversion management also and will be applicable to all adverse conditions (Fog/ Thunderstorm/ Duststorm/ any other factor) affecting normal operations from IGI Airport.

2. DISCUSSION

Operation of Aircraft during Adverse Conditions and Fog in IGI Airport –New Delhi

2.1 The aim is to apprise the members about the initiative of India for management of disruptions due to Fog, Thunderstorm/ Dust Storm or any Adverse Condition through the process of Collaborative Decision Making and to ensure safe and efficient management of arrivals/ diversions & smooth flow of departures.

2.2 Activation: Adverse CDM Process is activated when the airport is closed for departures or arrivals or both. Facilities at IGI Airport for Fog/ Low Visibility Management:

a) Runways 28/29/11 are equipped for CAT IIIB Operations.

b) CAT IIIB Arrivals can land at IGI Airport upto RVR of 50 Meters.

c) LVTO Departures can operate down to RVR of 125 Meters.

d) IGI Airport is equipped with **Advanced-Surface Movement Guidance and Control System (2 Sensors of SMR and 23 sensors of M-LAT, along with AGL System)**.

2.3 Challenges during Total Closure of Airport due to Fog/ Adverse Conditions:

a) Arrivals hold until they consume holding fuel and then divert to Alternate Aerodrome/s.

b) Diverted aircraft request for return to Delhi, when situation improves.

c) Bunching of Departures – delayed departures wait for visibility improvement/ availability of Runways and form bunch, when situation improves.

d) Airlines are unsure of Expected Departure Time and their sequence.

e) Passenger Boarding Issues – passengers wait inside the aircraft for long time.

f) Terminal Issues – Congestion, Information Management and Facilities.

g) Moment situation improves, all aircraft call at the same time for departure resulting in R/T congestion.

2.4 Airport Collaborative Decision Making Process in Adverse Conditions:

a) It is an initiative of India, involving all stakeholders.

b) Activated during closure of Airport in adverse conditions.

c) Participation from Airlines, ATM, Airport Operator and Met.

d) Results in early restoration of Normal Flow.

e) Arrivals are informed well in advance about parking bays and conditions at nearby airports for planning of suitable diversion alternate and Departures are informed well in advance about expected departure time. This solves passenger boarding issue as well as Terminal Issues for Delhi departures, to a great extent. Timely Planning of Diversion saves fuel/ emissions and avoids fuel emergencies.

2.5 Departure Management (Implemented since Nov 2011)

a) Peak departure timings are considered in calculations of ratio.

b) **Ratio of Departures for Scheduled Airlines:** The ratio, in which the pushback/startup of flights of various domestic airlines will be regulated, has been determined on the basis of proportion of flights of domestic airlines in DGCA approved winter/ summer schedule. International operations will be kept out of this sequencing due to less in numbers and long haul flights.

c) International operation will continue to guide by the Normal/ Low Visibility procedures.

d) Priority in sequencing will be decided on the basis of scheduled departure time slot in winter/ summer schedule.

e) Airlines will decide about the sequence of flights that will depart in their allocated slots and update TOBT accordingly.

f) Departure lists, based on slots are prepared and departure spacing, in a list is based on improving visibility/ weather conditions. For example, in a first batch of 10 flights; the departures may be spaced at 03 minutes interval to accommodate CAT-III arrivals landing on same runway when RVR has just crossed 125 meters. When RVR improves, the spacing may be reduced to 02 minutes and finally to 01 minutes.

g) ATC will issue **TSAT** through DA-CDM portal on the basis of **TOBT** entered by the airlines and forecast for improvement in RVR.

h) All pilots to maintain listening watch with respect to the delays, sequencing and related issues and should coordinate with their operations on company frequency for any clarification.

i) Pilot to contact Delivery with the Call sign and destination only and standby on the frequency.

j) Delivery Controller will give the aircraft the route clearance and revised TSAT, if applicable.

k) Pilots can check their departure sequence from their operations.

l) All airlines and Airport Operator will depute one representative in DA-CDM Cell at AOCC for coordination. Alternatively the airlines may coordinate with the **DA-CDM Cell on phone.**

m) Airlines shall enter TOBT of the flights as per their desired sequence in the DA-CDM portal based on the ratio. ATC will generate TSAT accordingly.

n) Push back clearance validity of 5 minutes will be strictly followed by ATC as well as pilots.

o) Slot management at other airports like Mumbai shall be dispensed with for flights delayed due to adverse conditions.

p) The responsibility of obtaining revised ADC no. (Air Defence Clearance for operating in ADIZ) for delayed flights lies with the airline concerned. However, ATC will extend help to airlines as far as practicable on this issue.

2.6 Tactical Air Traffic Flow Control Restrictions and Management of diversions (ready to be implemented in 2014-15). When all runways of IGI Airport are closed and there is no sign for immediate improvement in the situation:

a) Two ATC officers are designated, one for diversion planning and other for coordination.

b) Diversion planner will make list of arrivals within Delhi TMA and collect alternate airports for each flight (Jaipur, being nearest to Delhi, is most popular destination alternate).

c) Coordinator, in the meantime, will coordinate with nearby airports, to collect data about available parking bays and aerodrome conditions.

d) Arrivals closest to Delhi (within 70 NM) are given preference for Jaipur.

e) When forecast doesn't indicate improvement in next 30 minutes, a decision is taken to divert the arrivals, immediately.

f) Arrivals, enroute to Delhi beyond 70NM from Delhi are assigned suitable alternates nearest to their present position.

g) Airlines and all partners in DA-CDM Cell are informed about airport conditions, forecast and position of their arrivals along with allocated alternate.

h) Aircraft are not encouraged to proceed towards Delhi or to hold, when forecast indicate no improvement in next 30 minutes.

i) Flow Control Restrictions are imposed on major feeders to Delhi, e.g. Mumbai, Kolkata, Chennai, Bengaluru etc.

2.7 Advantages of Adv – CDM Process:

a) Pilots coordinate with their representatives in the CDM Cell.- **Reduced R/T Congestion**

b) Airlines aware of present weather/ airport conditions and current position of their arrivals/ departures/ diversions - **Better Situational Awareness**

c) Suitable Diversions Planned at an early stage.-**Enhanced Safety and Fuel/ Environment Savings**

d) Expected time of Startup/ Pushback is passed. Sequence allocation transparent and in front of all representatives - **Avoid unwanted arguments on R/T**

e) Better management of congestion after lifting of fog.-**ATC can normalize disruption more quickly**

f) Organized approach will **maximize the capacity** and every minute will be utilized to accommodate aircraft. (77 movements/ hour has been recorded after lifting of fog in this season with this process).

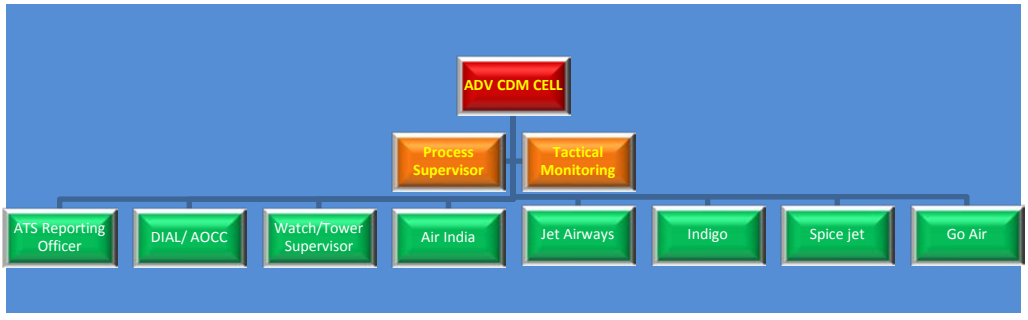
g) Timely decision for diversion planning saves fuel and avoids safety issues due to fuel emergencies. It is estimated that every diverted flight will save approximately 30 minutes of holding and enroute fuel when situation is not likely to improve in near future.

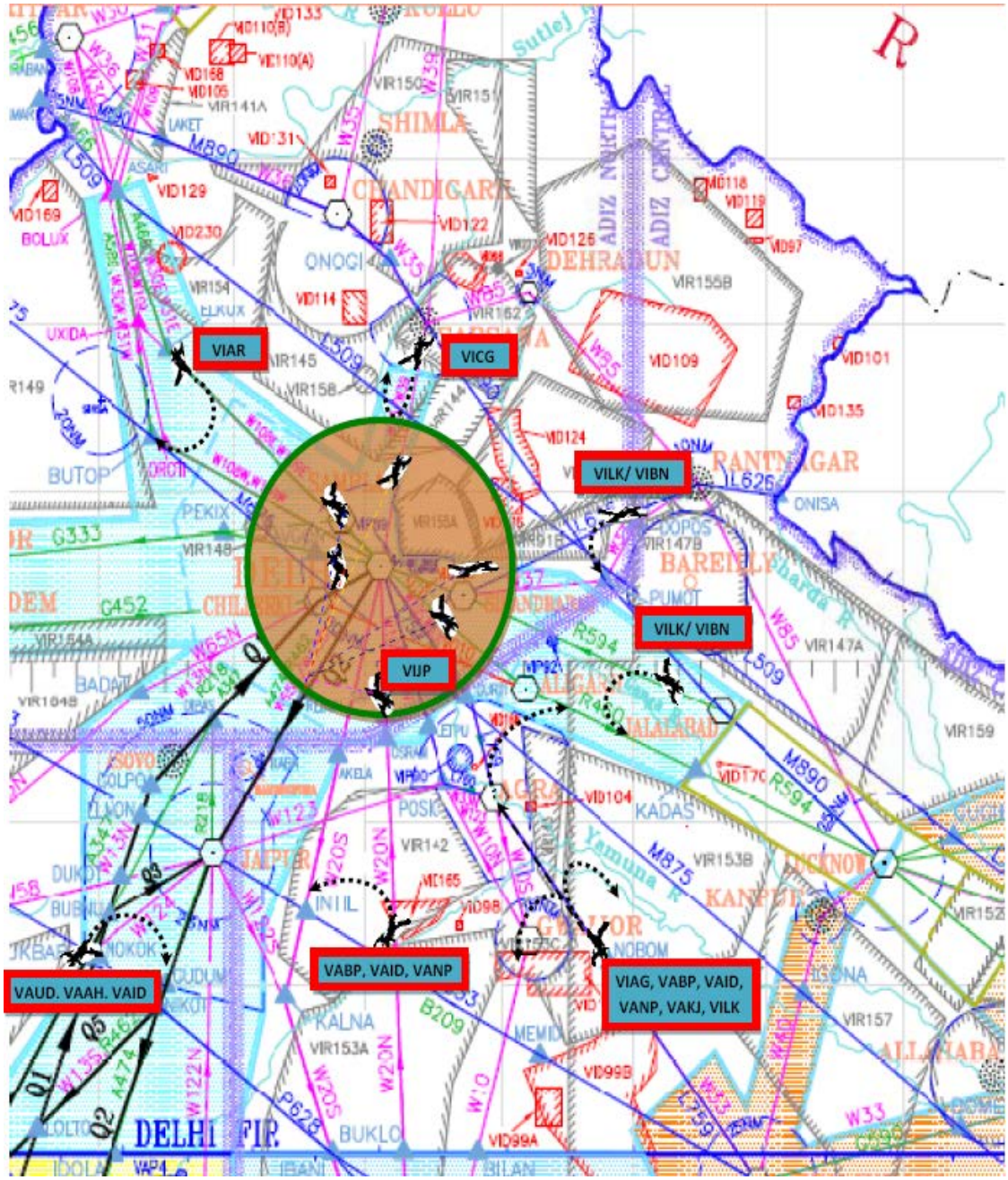
h) Arrivals, if continue towards Delhi, after arrival flow is blocked; will accumulate and add to airspace constraint and safety issues.

i) In absence of information about likely improvement, arrivals hold in the air for long duration and decide for diversion when holding fuel is exhausted. Planned diversion based on present conditions and forecast can save large amount of fuel and emissions.

j) Many arrivals are informed on their way and thereby can save further fuel by routing to alternate from TMA boundary.

2.8 DA - CDM Cell Adverse Conditions – Composition:





3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note India's effort to minimize impact of adverse conditions and to normalize airport operations in a quick and collaborative manner; and

b) discuss any relevant matters as appropriate.

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