



International Civil Aviation Organization

Special Coordination Meeting on the Implementation of ATM Contingency Arrangements

(Muscat, Oman, 16 – 18 July 2019)

Agenda Item 3: Review of current situation:

AIRSPACE CAPACITY CONSTRAINTS AND AVIATION INDUSTRY GROWTH

(Presented by the Sultanate of Oman)

SUMMARY

This paper presents an overview of the effects of several abnormal situations in the region and their implications on the ongoing efforts and future plans. The paper proposes solutions to address some of these challenges.

Action by the meeting is in paragraph 4.

REFERENCES

– MIDANPRIG/17-REPORT

1. INTRODUCTION

1.1 Since the beginning of this decade, the Sultanate of Oman has deployed large investments in the aviation sector especially in the airports and air navigation infrastructure, part of which has been allocated to enhance the national capabilities for managing contingency situations in the aviation sector, including but not limited to the opening of a full-scale ANS contingency facility and establishing state of the art CNS/ATM systems with full redundancy.

1.2 As the aviation sector in Oman has been growing rapidly, there was a balance between investments in enhancing the aviation sector capacity and efficiency to keep pace with growth and the investment in developing contingency management capabilities.

1.3 However, a number of events in the MID Region and in the interface with APAC Region has produced situations that requires considerable deliberation. These situations have forced a number of states left to deal with contingency situations as a matter of priority while the development plans became subjected to its ability to eliminate these conditions and restore normal situation.

1.4 This paper presents cases that reflect how the resources allocated for development plans have been diverted/reallocated to deal with contingencies/emergencies, which were prioritized, resulting in reduced abilities to take advantage of the boom in the aviation technology and subsequently increased gaps between ANS capacity and air traffic growth demands.

2. DISCUSSION

2.1 The unique geographical location of the Muscat FIR necessitates working with two ICAO regions.

2.2 While Oman is part of the ICAO Middle East region and works effectively to implement the adopted MID region air navigation plan, it also, play a vital role as it interfaces with countries in the APAC region. This situation requires developing an air navigation system interoperable with the two different regional plans, priorities and requirements.

2.3 At the same time, the Muscat FIR is surrounded by airspaces (FIRs) of different characteristics that require the application of different standards and procedures.

	Jeddah FIR	Karachi FIR	Mumbai FIR	Sanaa FIR	Tehran FIR	UAE FIR
Muscat FIR	10 minutes	5 minutes	10 minutes	10 minutes	20NM/50NM 10 minutes	10NM/ 5 minutes

2.4 The air navigation system in Oman was exposed to several adverse weather conditions during the period 2007 to 2018 that caused various types and intensity of damages to parts of air navigation system. The air navigation services have recovered its capabilities rapidly with no impact to the safety of the air traffic flow in the Muscat FIR. Nevertheless, some of these adverse weather conditions took place while the airspace was under contingency measures.

CYCLONE GUNO	CYCLONE PHET	CYCLONE CHAPALA	CYCLONE MEKUNU
June 2007	June 2010	Nov 2015	May 2018

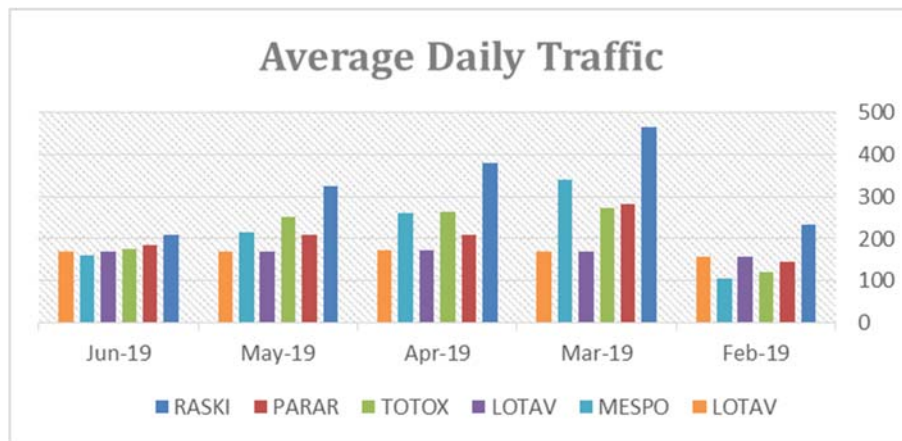
2.5 Furthermore, other non-operational crises in the region have caused long-term closure of a number of routes and boundary points. Some of these crises have dramatically changed the pattern of air traffic flow while other situations have exposed the air navigation system to increased or high risks. Therefore, a wide range of contingency measures and arrangements have been implemented with maximum possible flexibility to maintain a safe and orderly flow of air traffic.

Conflict Zones	Aircraft not allowed via specific airspace	Airspace closure for all traffic	Traffic avoiding specific routes
Mar 2015	June 2017	Feb 2019	June 2019

2.6 The air navigation system has been built on the basis of the existing and projected growth in air traffic through the current ATS route network and expected future changes and enhancement to these routes.

2.7 The unexpected change in the air traffic flow pattern caused inconsistency between the planned ANS concept of operation, on which the air traffic management systems were built on, and the perceived operational situation.

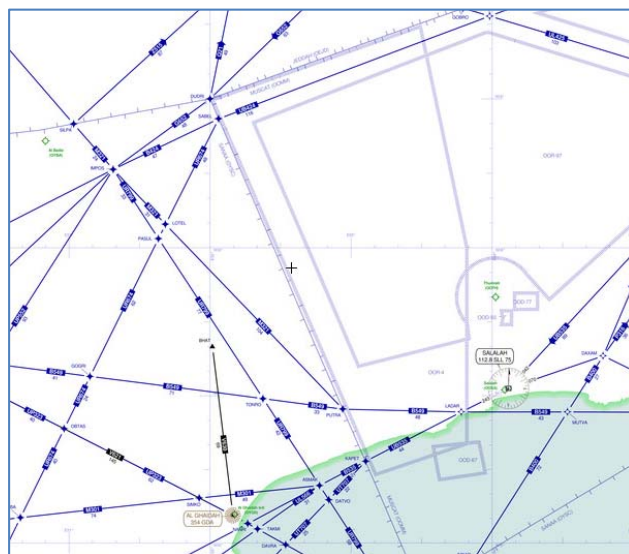
2.8 As a result, a number of solutions that may not always be effective and suitable for ANSPs and airspace users, were applied. Such as FLAS, increased separation and new ATS routes that may sometimes constitute capacity constraints or reduced airspace efficiency including less effective (constrained) use of preferred levels by airspace users.



2.9 The implications of the above mentioned points have had an impact in directing considerable development resources towards managing abnormal situation as well as incompatibility of national plans with regional and international plans. And, in the long run, these situations may affect the growth of the aviation industry if the ANSPs plans are not aligned with airline growth requirements.

2.10 Following are some examples of challenges, hotspots in the Muscat FIR:

- Closed boundary points: KAPET, PUTRA and SABEL



- Change in traffic pattern UNDUN-MIXAM / ULDUN-LAKLU



- Traffic shifting from normal routes to congested sector:



2.11 In addition to these issues caused by the ongoing situations, a number of human errors, inadequate use of regional coordination framework and technical limitations added more constraints to air traffic management such as:

- Pilots non-adherence to the published contingency measures
- Limited surveillance and communication infrastructure over oceanic airspace adjacent to Muscat FIR.
- Short noticed changes of published information related to airspace and route availability that impacted neighbouring FIRs.

3. CONCLUSION

3.1 It is therefore imperative that ICAO, relevant States and aviation stakeholders launch a comprehensive review of the airspace situation in the region and agree on tactical actions that will mitigate the risks involved, with the objective of providing flexibility and capacity for safe and efficient air traffic management, and take appropriate measures to restore normal situation with least possible delays.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) note the information in this working paper;
- b) improve coordination and adherence to published procedures during contingency situations; and
- c) propose and agree on recovery plans to restore normal situation as well as tactical measures to reduce traffic flow in congestion areas.