



International Civil Aviation Organization

MIDANPIRG/19 & RASG-MID/9 Meetings

(Saudi Arabia, 14-17 February 2022)

Agenda Item 5.7 ATM/SAR

Use of recorded live traffic in ATC simulators for the renewal of procedural ratings

(Presented by Saudi Arabia)

SUMMARY

This paper presents challenges encountered in the obtaining a procedural rating (APP/ACC) or maintaining the validity of procedural ratings for Approach and ACC controllers when air traffic services are provided through surveillance systems (Radar/ ADS-B) most of the time.

The standard provisions in annex 1 for the initial acquisition of a procedural rating require the recording of 180 hours with live traffic before trainees are checked and rated. Also, maintaining the competency and validity of a procedural rating requires assessment while working with life traffic.

In the current surveillance environment dominated by radar control with overlapping coverage areas, and the emergence and adoption of new surveillance technologies such as ADS-B, there are circumstances when controllers must revert to standard (procedural) separation in the provision of ATC services. These circumstances oblige states to ensure their controllers are rated procedurally all the time to enable them to handle traffic safely in these occasions.

ATC surveillance simulators have reached a high maturity level and almost all of them can be fed with the recording of actual live traffic flow with actual aircraft performance then these recorded live traffic situations can be played back for trainee controllers for practice and training.

Action by the meeting is in paragraph 4

REFERENCE(S)

ICAO Annex 1 Personnel Licensing, Chapter 4, paragraph 4.5, and Chapter 2, Paragraph 2.1.6

Doc 9868, Title: PANS-Training

Doc 10056, Title. Manual on ATC Competency-Based Training & Assessment, 1st Edition, 2017

1. INTRODUCTION

1.1 Based on work paper 45 submitted by UAE in MEDANPERG 18, the ATM/SG7 meeting conducted in Nov 2021 concluded with a statement allowing the usage of ATC simulators for the renewal and maintenance of competency during pandemics causing reduced traffic volumes.

1.2 This paper calls for expanding the scope of the statement to allow the usage of ATC simulators for the acquisition or renewal of two ATC ratings -the Approach and Area Control Procedural ratings- where these ratings cannot practically be obtained or maintained because of the continued usage of surveillance control systems.

1.3 To address the diversity in the ATS surveillance coverage within Jeddah FIR, Saudi Air Navigation Services (SANS) adopted recurrent training scheme using the ATC simulator allowing Riyadh, Jeddah Area Control Centre (ACCs), and Dammam and Abha approach control centers to train ATCOs on the management of traffic using procedural control in the event of a surveillance degradation or failure.

2. DISCUSSION

2.1. According to ICAO Annex1 provisions, obtaining an initial procedural rating or maintaining the validity of an acquired procedural rating, requires working with live traffic applying procedural control, which is practically not possible because of the usage of surveillance systems most of the time. The solution might be in the usage of recorded live actual traffic exercises played back in surveillance simulators.

2.2. The ATS surveillance systems (e.g. Radar/ ADS-B) are widely used the provision of ATC services in many parts of the world including the MID Region countries, with overlapping sensors. However, there are cases where zones are covered with a single source providing surveillance data. At such airspace volumes and aerodromes, the contingency plans are developed to systematically revert to procedural control separation in the event of a surveillance degradation or failure, which requires a qualification on procedural control.

2.3 Due to the fact that surveillance service is provided almost all the time with the exception of few days for maintenance switch-offs, the time available for training ATCOs on procedural control has become very short and insufficient to record the required rating hours.

2.4 Most of airspace in Jeddah FIR is covered by multiple surveillance system with overlapping coverage, but still there are areas which are covered by a single civilian surveillance (i.e., Empty Quarter). This fact obliges the Saudi ANS provider to maintain procedural ratings of ATCOs working at these units valid as a safety mitigation measure in case of failure of the single source surveillance system.

2.5 This might be a national or regional matter of concern. To find out the extent of problem on the MID region, a survey needs to be conducted across the MID states. If it has been found that it is a regional issue, then if not in this MEDANPIRG, maybe in the next meeting, this issue could be addressed in a formal recommendation.

2.6 In June 2005, the air navigation commission, based on proposals developed by the flight crew licensing and training panel (FCLTP) has adopted Amendment 175 to Annex 1 allowing better recognition of the role of flight simulation training devices (FTDs) in acquiring or maintaining the competences required for the various levels of licenses and ratings for pilots.

2.7 Most of nowadays ATC surveillance simulators have the functionality of recording actual traffic flow and playing it back in simulator for training purposes to add more realism into their training

systems. Such being the case, these systems can be used to check the knowledge, skill, and to a certain extent the attitude of controllers in managing almost live traffic.

3. CONCLUSION

3.1 ATC surveillance Simulators having the functionality of recoding and playing back live traffic for training purposes, can be a viable solution for the renewal of procedural rating in today's surveillance environment.

3.2 In KSA, the ATS Units providing ATS surveillance services have defined contingency arrangements that must be used during unusual and abnormal circumstances including the event of a surveillance degradation or failure.

3.3 The ATS units' annual recurrent training is covering Training in Unusual Circumstances and Emergencies (TRUCE) which includes management of traffic during failures or outages of critical ATS systems. Regarding loss of ATS surveillance systems, the TRUCE is divided into:

- a. Theoretical sessions covering the contents of contingency plan including the coordination with adjacent ATS Units to manage the traffic flow.
- b. Practical exercises for each ATCO focusing on the application of procedural control during heavy traffic. The exercises are focusing on known areas with ATS surveillance limited or no coverage and the approach areas where the level of redundancy of ATS surveillance is either limited or absent (single coverage). Each ATCOs is assessed during the exercises and based on his/her performance in applying the procedural control, the exercises may be repeated until the ATCO achieves the required level of performance and meet the success criteria. The competency scheme used to assess the ATCOs during non-routine situations is based on ICAO ATC competency framework described in Doc 10056 - Manual on Air Traffic Controller Competency-based Training and Assessment. A copy of the competency element and performance criteria is attached.

3.4 The training duration is based on the competency/proficiency checks and ATCOs recorded performance assessed on yearly basis.

Competency scheme used to assess ATCOs during non-routine situations

Competency Unit 6	Management of Non-routine Situations (NONR)	Definition	Detect and respond to emergency and unusual situations related to aircraft operations and manage degraded modes of ATS operation
CE No.	Competency Element		
CE 6.1	Manage emergency and unusual situations related to aircraft operations		
CE 6.2	Manage degraded modes of ATS operations		
PC No.	Performance Criteria (Observable Behaviour)		
PC 6.1.	Determines the nature of the emergency		
PC 6.2	Prioritises actions based on the urgency of the situation		
PC 6.3	Decides upon the most appropriate type of assistance that can be given		
PC 6.4	Follows prescribed procedures for communication and coordination of urgent situations		
PC 6.5	Detects that ATS systems and/or equipment have degraded		
PC 6.6	Assesses the impact of degraded mode of operation		
PC 6.7	Takes action, when necessary, to ensure safety of aircraft in area of responsibility		
PC 6.8	Uses standard ATS message formats and protocol for non-verbal coordination		
PC 6.9	Follows prescribed procedures for coordinating and communicating a degraded mode of operation		
PC 6.10	Creates solutions when no procedure exists for responding to non-routine situations		

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a. The meeting is invited to take note of the information provided in this paper and to share experience on the maintenance of ATCOs' qualification for the application of procedural control in the event of a surveillance degradation or failure. (Survey is attached)
- b. Consider whether there is a need to revise the statement in paragraph 2.4 of the ATM/SG7 meeting report or not.

- End -

SURVEY

This survey aims at exploring MID States need to maintain the validity of a procedural rating (Approach or Area control rating) in today's surveillance environment where ATC is provided most of the time by radars and ADS-B.

This survey should be responded to only by countries providing ATC radar/ADS-B surveillance services in their FIR. Your cooperation is highly appreciated to evaluate the status of procedural control in the MID Region.

Q1: Is the whole FIR of your country covered by Surveillance systems like radar or ADS-B?

Yes

No

Q.2: Are there any parts of the airspace or aerodromes covered by a single sensor (one radar antennae)

Yes

No

Q.3 Does the contingency plan for any part of airspace/ aerodrome require reverting to procedural separation in case of surveillance system failure?

Yes

No

Q.4 Does your national regulation require Radar Controllers to have a valid procedural rating?

Yes

No

Q.5 Does the provision of ATC surveillance service impede the renewal of procedural ratings in your country?

Yes

No

Q.6: Do you agree that maintaining the validity of a procedural rating in a surveillance environment is a necessity for safety?

Yes

No

Q.7: Do your radar simulators have the functionality of recording live traffic and the possibility to use these recordings for training purposes?

Yes

No

Q.8: Do you agree on the use of recorded live traffic for the renewal of a procedural rating in the simulator?

Yes

No

