



*International Civil Aviation Organization*  
**The Third Meeting of the APANPIRG ATM Sub-Group  
(ATM /SG/3)**

Bangkok, Thailand, 03-07 August 2015

**Agenda Item 4: ATM Systems (Modernisation, Seamless ATM, CNS, ATFM)**

**QUANTITATIVE PERFORMANCE ASSESSMENT: AIR TRAFFIC CONTROLLERS**

(Presented by India)

**SUMMARY**

This paper presents the methodology used by Airports Authority of India for the Performance assessment of Air Traffic controllers in various Air Traffic Control Units. The methodology adopted is an improvement from a Qualitative assessment to a Quantitative assessment. This qualitative to quantitative approach of evaluation of controller's competence is aimed at improvement in safety and efficiency of aircraft operations through directed remedial training to the controllers.

**1. INTRODUCTION**

1.1 In order to maintain safety and efficiency of aircraft operations in Indian airspace, air traffic controllers are required to demonstrate their continuing competence. Competency assessment is carried out by monitoring the efficiency of air traffic controllers while maintaining the safety through assessment of their performance at the operating positions for which ratings are held by them. Proficiency assessment of air traffic controllers is one such method to monitor the competence of air traffic controllers which is carried out periodically at least once a year with an objective of helping the ATC officers to maintain their proficiency at or above the desired level.

1.2 A proficiency assessment is aimed at rectification of mistakes, wrong perceptions/practice and the aberrations that creep in the system. It is a constructive process through which individual controllers are encouraged and led towards higher level of performance.

1.3 Earlier the methodology used to assess the controller's proficiency was qualitative and thus very subjective. Therefore there was a need to develop a methodology for quantitative measurement of controllers' proficiency so that uniformity in assessment could be maintained. Quantitative Assessment is an objective evaluation of a controller's competence and may be used for Performance profiling of Air Traffic Controllers (ATCOs) over a period of time.

**2. DISCUSSION**

Need for Quantitative Performance Assessment

2.1 Qualitative Competence assessment of the ATCOs was generally very subjective and performance is mostly evaluated in of Grades such as Very Good, Good, Satisfactory, Unsatisfactory etc.

2.2 Criteria for award of Grades were not clearly defined and depended only on the experience and perception of the assessor in evaluating the performance of assessee in a given situation. Therefore, the evaluation of performance of the same assessment by different assessors might differ. Thus the performance profile of a controller might not be realistic and correct.

2.3 A qualitative assessment which is subject to an assessor's judgement only, led to discontentment and denunciation of whole process by the controllers, hence, the competence assessment losing its objective and purpose.

#### Benefits of Quantitative Performance Assessment

2.4 In order to overcome disadvantages of a qualitative performance assessment of a controller, Airports Authority of India designed a new Proficiency Check Proforma which has helped the ANSP in achieving a credible evaluation of the performance of the controller and is an indication of strengths and weaknesses in areas of Safety, Skill and Behavior.

2.5 The performance is monitored in terms of marks allocated to each performance identifier according to the expected results. Subsequent proficiency checks will clearly indicate the extent of change in performance measure.

2.6 Since, the expected results are already defined against all Performance Identifiers, hence the evaluation is not assessor dependent but performance dependent. The evaluation of a controller by different assessors under same situation will more or less yield similar results.

2.7 The evaluation becomes more agreeable and acceptable to the controllers and the assessment process meets its objective and purpose.

2.8 An objective assessment captures even the slightest variation in the performance of the controller and can also be an indicator of the extent and effectiveness of refresher or remedial training.

#### Salient features of Assessment Proforma

2.9 A controller is assessed in following four (04) areas of Performance:

- P1: Safety;
- P2: Skill;
- P3: Maintaining Attention, Situation Awareness and Sector Work Load (Behaviour); and
- P4: Knowledge.

2.10 There are forty (40) Performance identifiers (PI) in each assessment form. Each performance identifier carries mark(s) as indicated in appropriate column of the table which includes "Negative Mark (s)" too. The value assigned to each column is according to the significance of that PI in terms of Safety, Efficiency and Capacity. Only one grade is to be circled against one performance identifier (PI).

2.11 Proficiency check proforma are designed for each ATC unit and the Performance identifiers (PIs) in P2 is according to the specific requirements of that ATC unit.

2.12 Some PIs in Performance Area P2 are linked to some critical PIs in P3 as the performance in those PIs is an outcome of the performance of those critical PIs in P3 (Behaviour) and the score of such PIs in P3 should not be more than the score of linked PIs in P2.

2.13 For Example, the PIs 5 to 10 in Performance Area- Skill (P2) (Figure 1) are linked to the PIs in Performance area-Maintaining Attention, Situation Awareness and Sector Work Load (P3) (Figure 2).

P2. SKILL						
Performance identifiers		A	B	C	D	E (Spacing reduced by more than 1 NM from value prescribed in SOP).
5	Inter arrival spacing provided as prescribed in SOP. (Leverage of upto +1 NM allowed)	1.0	0.8	- 0.6	- 0.8	-1.0
Performance identifiers		A	B	C	D	E
6	Aircraft Identified early and Identity maintained	1.0	0.8	- 0.6	- 0.8	-1.0
7	Arrivals vectored by most optimum routing	1.0	0.8	- 0.6	- 0.8	-1.0
8	Departures vectored/climbed to flight plan/requested route/level without delay	1.0	0.8	- 0.6	- 0.8	-1.0
9	Descend profile of arriving aircraft was maintained	1.0	0.8	- 0.6	- 0.8	-1.0
10	Monitored descend profile of aircraft before turning onto final approach.	1.0	0.8	- 0.6	- 0.8	-1.0

**Figure 1: Skill PIs which are linked to the PIs of Performance area P3**

P3 MAINTAINING ATTENTION, SITUATION AWARENESS AND SECTOR WORK LOAD						
Performance identifiers		A	B	C	D	E
23	Maintained situational awareness at all times	1.0	0.8	- 0.6	- 0.8	-1.0
24	Scanned the area of jurisdiction effectively	1.0	0.8	- 0.6	- 0.8	-1.0
25	Shifted attention between various aircraft, as required	1.0	0.8	- 0.6	- 0.8	-1.0
26	Prioritised activities effectively	1.0	0.8	- 0.6	- 0.8	-1.0
27	Handled workload effectively	1.0	0.8	- 0.6	- 0.8	-1.0
28	Stayed Calm, focussed and handled stress effectively	1.0	0.8	- 0.6	- 0.8	-1.0

**Figure 2: PIs in Performance area P3 which are linked to the PIs of Performance area P2**

2.14 Performance Identifiers in Safety Performance Area P1, carry '-15' marks to ensure that the assessee does not get a score of 28 or more, whenever there is Infringement of separation / terrain clearance minima. (Figure 3).

Performance identifiers		On all occasions	On all occasions except once but no infringement of separation minima	On all occasions except twice but no infringement of separation minima	On all occasions except thrice or more but no infringement of separation minima	Infringement of separation/ terrain clearance minima
2	The applied separation between aircraft is the most appropriate taking into account safety & separation minima without causing delays.	1.0	0.8	0.6	-0.8	-15.0
3	The applied separation from Prohibited, Danger and Restricted airspace is the most appropriate taking into account safety & separation minima without causing delays.	1.0	0.8	0.6	-0.8	-15.0
4	The applied clearance from terrain is the most appropriate taking into account safety & separation minima without causing delays.	1.0	0.8	0.6	-0.8	-15.0

**Figure 3: Safety Performance identifiers showing -15 marks for infringement of separation etc.**

2.15 The terms used for the assessment result on the basis of overall score obtained are as follows:

S.N.	Overall Performance	Score Criteria	Meaning
1	<b>Very Good</b>	<b>When Score is <math>\geq 36</math></b>	It indicates that the observed performance in the proficiency check meets expected performance requirements to work on that position.
2	<b>Meets the requirement</b>	<b>When the score is <math>\geq 32</math> but <math>&lt; 36</math></b>	It indicates that the observed performance in the proficiency check meets expected performance requirements to work on that position.
3	<b>Needs improvement in specified areas</b>		It indicates that the observed performance is acceptable, but must improve performance in order to maintain proficiency to work on that position. In such cases, the officer carrying out proficiency check shall counsel the controller on deficient performance indicators and record it. If required, the involved controller may be taken out of roster for counselling/ corrective training.
4	<b>Does not meet</b>	<b>When the score is <math>&lt; 28</math></b>	It indicates that the observed

	<b>requirement</b>		performance in the proficiency checks fails to meet the performance requirements to work independently on that position, and may require extensive training in the area identified as unsatisfactory.
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2.16 The performance identifiers included for the assessment also gives a fair idea of common practices at the ATC Centre and are used as a decision tool for:

- a) Individual Training needs
- b) Airport specific sensitization/refresher training needs
- c) Review of Procedures
- d) Limitations of ATC systems vis-à-vis ATC Centre's specific requirements
- e) Manpower deployment in performance critical ATC Centres
- f) Workload distribution

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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