INTERNATIONAL CIVIL AVIATION ORGANISATION

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ATS OPERATIONAL SUPERVISION AND MANAGEMENT

(Presented by ASECNA)

Summary

This working paper presents the ATS supervision and management principles in ASECNA. It focuses on how ASECNA determines the required ATC staff for running ATC positions.

I. INTRODUCTION

As far as ATS operational supervision is concerned, ASECNA set up policies to provide safe and efficient air navigation services throughout an airspace of 16 millions square kilometres.

II. OPERATIONAL ATS MANAGEMENT

With regard to staff assignment in ATC positions, ASECNA policy is based on empirical assessment of air traffic controllers' workload. Such organization defines the typical ATC position and its capacity, the type of ATC centre (opening hours, number of ATC positions) and how the workload is assessed.

- **ATC position**

 Conventionally, it is a physical position that provides air traffic services. In addition to air traffic controllers on duty, the ATC position includes furniture, hard and software means devoted to ATC operations.

In order to staff an ATC position, it has been taken into account the traffic flow as well as the minimum rest time necessary for controllers to resume their shift with the required performances

An ATC position comprises two posts:

- The Executive Controller post (EC) and
- The Planner Controller (PL) post.

The choice of the working team takes into account the experience, expertise and age of the members of the team, in a manner to guaranty an almost balanced planning in terms of performance, cohesion and workload.

During the ATCO on job training and the yearly refresher course, the simulations take into account the minimum workload hereunder and every ATCO faces a traffic corresponding to medium to overloaded level.

Minimum workload	Interpretation	Recorded working time during one hour
Above 80%	Overload	41 min +
60% - 79%	Heavy load	31 – 40 min
40% - 59%	Medium load	21 – 30 min
20% - 39%	Light load	11 – 20 min
0% - 19%	Very light load	0 – 10 min

- **Method of calculation of staffing**

This ATC workload assessment and aerodromes categorization have permitted to define the necessary ATC staff for each ATC centre as follows:

$$EFN=NP*NAP*Ent[(364*NHJ)/(NSA*NHS)+1]$$

EFN: Total ATC Necessary Staff

NHJ: Daily opening Time expressed in hours

NP: Number of ATC Position

NSA: Yearly duty   Time expressed in weeks

NAP: Number of controllers per Position

NHS: Weekly duty Time expressed in hours

The application of this formula for example of Airport open H24 with only one ATS unit is :

$$EFN= 1*2*Ent[(365*24)/(34*40)+1] = 14 \text{ ATCOs}$$

Also, the implementation of data link communication, surveillance and flight plan processing means lead to take the following measures:

- A reorganization of the ATC units;
- A relevant training of Air Traffic Controllers.

With regards to these facts and in other to make an efficient use of this equipment, the staff assignment on operational positions will change in the centres that are equipped. It evolves a Flight Data Operator (FDO) position bringing the number of positions at three (3) controllers.

After the assessment, the number of ATCOs will be increase from 619 now to 1205 in 2021.

ASECNA has developed a vast program to be deployed from 2013 to 2021 so as to cope with the staff shortage. The following measures are taken in order to achieve the objectives of the plan:

- Reduction of the duration of the initial training of ATCOs;
- Agreements with other training centres if necessary

ATS management and traffic demand

Centre	ATS unit	Daily peak period	Maximum traffic managed simultaneously during peak period	Maximum traffic managed during peak period	Average of daily traffic
Cotonou	TWR	11H00-13H00	4	17	35
	APP	10H30 -12H00 15H00-16H30	12	40	75
Ouagadougou	TWR/APP	14H00- 17H00	8	13	36
	ACC	21H00-00H00	7	12	52
Bobo-Dioulasso	TWR/APP	08H00-13H00	3	3	4
Bangui	TWR/APP	07h00-08h00	10	15	44
Abidjan	TWR	17H30-18H30	9	15	85
	APP	16H00-18H00	10	27	81
	ACC	10H00-13H00	14	25	133
Brazzaville	TWR	15h00-17h00	8	21	70
	ACC	09h00-12h00	15	48	170
Pointe Noire	TWR/APP	08H00-11H00	8	16	45

Centre	ATS unit	Daily peak period	Maximum traffic managed simultaneously during peak period	Maximum traffic managed during peak period	Average of daily traffic
Libreville	TWR/APP	15H00-18H00	07	35	100
	ACC	15H00-18H00	10	40	115
Niamey	TWR/APP	11H30-14H00	9	15	55
	ACC	23H00-01H00	25	70	215
Lomé	TWR	11H00-16H00	7	18	40
	ACC	21H00-00H00	8	30	85
Bamako	TWR/APP	07h00 à 08h00	09	15	55
	ACC	07h00 à 08h00	11	13	65
Moroni	TWR/APP	08H00 -13H00	6	25	35
Bissau	TWR/APP	13H00-14H00	02	3	8
Antananarivo	TWR	08h00-11h30	8	12	53
	APP	08H00-11H30	11	17	48
	ACC	11H30-14h30	26	37	118
Douala	TWR	09H00-11H00	08	14	65
		15H-17H00	07	18	
	ACC	09H00-12H00	11	40	160
		15H00-17H00	12	36	
		21H00-23H00	10	28	
Nouakchott	TWR/APP	17H00-23H45	7	20	35
	ACC	23H00-03H00	30	40	100
Dakar	TWR	14H00-18H00	06	23	83
	APP	02H00-04H00	07	22	110
	ACC	02H00-04H00	12	35	150
Ndjamena	TWR/APP	06H00-08H00	06	11	40
		11H00-15H00	09	15	
	ACC	08H00-10H30	14	30	161
		13H00-15H30	13	29	
Malabo	TWR/APP	07H00-10H00	10	20	53

Where traffic demand varies significantly (AFCON organisation or summit of heads of states), a safety case identifies the means to regulate traffic volume accordingly.

To ensure that safety is not compromised whenever the traffic demand in an airspace or at an aerodrome is forecast to increase significantly, procedures are taken to manage dynamically the ATC organization accordingly.

III. ATS OPERATIONAL SUPERVISION

The ATS operational supervision is organized at two levels:

III.1 ATS supervision in the ASECNA Representatives

ASECNA has seventeen (17) representatives. In ATS units, the management organization is as follows:

1. ATC unit chiefs (Air traffic unit, ATC operations unit)

These two units are in charge of:

- providing a tactical management of ATC ;
- assuring the management of human resources: Shift organisation, planning of vacations, ….
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2. ATC Training Manager

He is in charge of :

- Conducting all training aspects   in compliance with the regulatory provisions stated in PFS (On-site training plan).
- Producing and maintaining appropriate training documentation, and take a proactive measures to ensure that appropriate training is efficiently provided to all ATC staff.

The ATS unit managers shall also make sure that the on-site training takes into account the recommendations and conclusion of ATS events investigations.

The Managers of ATS units in ASECNA Representatives make the following reports to the headquarters:

- The weekly safety event report;
- The investigation of safety events of medium and high risk;
- The monthly operational report on Human Resources training, documentation, safety events, corrective and preventive actions for safety events and other investigations.

III.2 ATS supervision in the ASECNA Headquarters

The ATS is managed at ASECNA headquarters by ATS Service which is responsible for:
- Planning and organizing the ATM activities for the provision of the ATS;
- Ensuring proper functioning of air traffic management services;
- Defining the required number of ATCOs per ATC centre;
- Defining and implementing airspace organization;
- Checking, supervising and inspecting the ATS units in ASECNA Representatives;
- Investigating on aircraft incidents and accidents;
- Developing and maintaining the standard working methods;
- Ensuring the availability of technical procedures and manuals necessary for the provision of ATS;
- Elaborating and updating other operating documents;
- Advising, counselling controllers on safety and administrative matters;
- Evaluating and recommending performance ratings for controllers;
- Conducting safety cases for any ATM change.

To achieve this goal the reports coming from centers are analyzed and a feedback is given regarding operational issues.

In order to identify and address the air traffic management issues in each FIR and to coordinate actions, ASECNA organizes:

- Meetings of ATS units chiefs;
- Coordination meeting of the each FIR every two years with the participation of the neighboring FIR.

IV. CONCLUSION

The meeting is invited:

- to take note of the actions made by ASECNA for ATS supervision and management;
- To propose any improvement measure related to the organization of ATM.