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ASSEMBLY — 42ND SESSION

TECHNICAL COMMISSION

Agenda Item 25: Other issues to be considered by the Technical Commission

METHOD ENGINEERING STRATEGY TO CALCULATE THE REQUIRED NUMBER OF ANS AND AGA INSPECTORS REQUIRED

(Presented by the Dominican Republic)

EXECUTIVE SUMMARY

This paper proposes an engineering-of-methods strategy to determine, transparently and consistently, the number of air navigation services (ANS) and aerodromes and ground aids (AGA) inspectors a Member State requires for effective safety oversight.

*Strategic
Goals:*

This working paper relates to *Every Flight is Safe and Secure*.

*Financial
implications:*

The activities mentioned in this study note are subject to the availability of resources from the regular budget for 2026-2027-2028, extrabudgetary contributions, and/or voluntary contributions.

References:

Doc 9734, *Safety Oversight Manual*
Doc 10070, *Manual on the Competencies of Civil Aviation Safety Inspectors*

¹ English and Spanish versions provided by the Dominican Republic.

1. INTRODUCTION

1.1 This paper presents a methodological proposal based on methods engineering for determining, in a clear and standardized manner, the number of personnel required for effective safety oversight, in relation to air navigation services (ANS) and aerodromes, air routes and ground aids (AGA) inspection activities.

2. DISCUSSION

2.1 Over time, various States have attempted to develop methodological frameworks that allow them to objectively calculate the number of inspectors required to comply with the oversight obligations established under the Universal Safety Oversight Audit Programme (USOAP). Methods engineering, a branch of industrial engineering, provides tools for efficiently determining the human resources required in both production and service processes, balancing the workload with available capacity measured in man-hours.

2.2 However, the methodologies currently used in some States omit relevant activities included within the scope of the ANS and AGA inspector's obligations, which limits the accuracy of the calculation.

2.3 Methodology

2.3.1 The proposed methodology comprises the following stages:

- a) projection and determination of workload;
- b) determination of operational capacity;
- c) calculation of the required number of ANS-AGA inspectors;
- d) review and validation of the calculation; and
- e) institutional approval of the result.

2.4 Projection and determination of workload

2.4.1 The first step is to identify all the activities performed by inspectors, by area or specialty, to quantify the projected workload. Some of the activities contemplated include: monitoring findings and action plans, participating in training sessions, assessing infrastructure/procedures, preparing inspection plans and reports, among others.

2.4.2 The operational activities or workload of the ANS-AGA inspector may include, but are not limited to: follow-up on findings and action plans; investigations into case resolutions; participation in training and recurrent events; evaluation of changes to AGA infrastructure/ANS procedures; participation in workshops; training delivery; technical collaborations; operational safety technical study groups; updating regulations and manuals; evaluating adoption letters; preparing inspection plans; conducting scheduled or extraordinary inspections; preparing inspection reports; participating in inspection closing meetings; holding department meetings; and other activities.

2.4.3 Each activity is assigned an estimated annual number of hours, which is adjusted with a correction factor (between 0.2 and 0.3) to cover uncontrolled variations. This final calculation is: net workload hours (Net Workload).

2.5 **Determining capacity**

2.5.1 To calculate the effective or working hours available for the year, the business days, vacation days, holidays, sick days, grace days, birthdays, among others, are listed. From this data, the total number of net days available for the year is obtained by subtracting this sum from the total number of days in the year.

2.5.2 The working hours per day and breaks per shift are then determined, and the net hours available per day are obtained.

2.5.3 Available and effective hours per year per inspector is obtained

2.6 **Calculation of the required number of ANS-AGA inspectors**

2.6.1 To calculate the number of personnel required to cover the projected workload, divide the total net workload hours by the total available and effective hours per inspector per year. This yields a theoretical number of inspectors required, which should be rounded up to the nearest whole number. An example of the calculation is shown below:

Total net workload hours: 912 hrs.

Total available and effective hours per year per inspector: 1 144 hrs.

Theoretical number of inspectors required: $912 \text{ hrs} / 1\,144 \text{ hrs} = 0.797$

Actual number of inspectors required: 1

2.6.2 To perform the calculation, the “calculation of the required number of inspectors” template (Appendix A – Spanish only) will be used.

2.7 **Review of the calculation**

2.7.1 The calculation table is reviewed by technical staff and sent to the ANS-AGA Surveillance Director for validation. This instrument serves as a technical basis for the planning and human resource allocation processes within the aeronautical authority.

2.8 **Strategy**

2.8.1 The strategy for implementing the methodological framework includes the following activities: approval of the guide; training for States through regional offices; inclusion of the initiative on the agenda of regional working groups; creation of an implementation roadmap for States; presentation of implementation progress; and presentation of reports on the effectiveness and efficiency of the methodology's implementation.

3. **CONCLUSION**

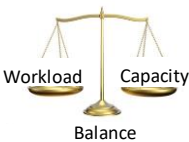
3.1 Through the implementation of the methodological framework, based on methods engineering principles, States will have a standardized technical tool to objectively and transparently determine the number of inspectors required, thus strengthening their operational safety oversight capabilities.

3.2 This methodology offers a scientific, validated approach that takes into account all the functions performed by inspectors and contributes to more efficient management of human resources, in line with the obligations established by ICAO.

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APPENDIX

SPREADSHEET FOR DETERMINING THE NUMBER OF ANS-AGA INSPECTORS REQUIRED FOR EFFECTIVE SURVEILLANCE

HOJA DE CALCULO PARA LA DETERMINACIÓN DE LA CANTIDAD DE INSPECTORES ANS-AGA REQUERIDOS PARA UNA VIGILANCIA EFECTIVA			
			
Especialidad: Inspector ANS-XXX / AGA		Proyecciones al año YYYY	
Funciones de trabajo/ Actividades del año/ Workload (Carga de trabajo)	Cantidad	Horas unit.	Horas totales
1 Seguimiento a constataciones y planes de acción			
2 Investigaciones de resoluciones de casos			
3 Participación en Entrenamientos y recurrentes			
4 Evaluación de cambios de infraestructuras AGA / procedimientos ANS			
5 Participación en mesas de trabajo			
6 Impartición de capacitaciones			
7 Colaboraciones técnicas			
8 Círculos de estudios técnicos de SO			
9 Actualización de la reglamentación y manuales			
10 Evaluación de Cartas de adopción			
11 Elaboración de planes de inspección			
12 Realización de Inspecciones acorde a programa o extraordinarias			
13 Elaboración de informes de inspección			
14 Participación en reuniones de cierre de inspecciones			
15 Reuniones de su área			
16 Otras actividades			
Carga anual del año (Horas)			0
Factor de carga (load factor)			
Hrs de carga de trabajo			0
Capacity. Working Unit. Capacidad en Hrs. (Hrs disponible por inspector)			Cantidad
1 Días del año (lunes a viernes)			
2 Días de vacaciones al año			
3 Días festivos del año			
4 Días por enfermedad			
5 Día de cumpleaños			
Total de días netos disponibles al año			0.00
7 Horas laborables por día			
8 Receso por jornada de trabajo (hrs.)			
9 Horas netas disponible por día			
Total de horas disponibles al año por inspector			0
Cantidad teorica de Inspectores requeridos			
Cantidad real de Inspectores requeridos			

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