

	CODE:	XXXXXX
	ITEM:	Methodology for detecting needs and analysis of HR Calculation in technical areas and specialties.
	REVISION:	Rev. 00
	EFFECTIVE DATE	XXXXXXX

I. OVERVIEW:

This methodology is developed to provide the CAA of each State with an auditable tool for the calculation of the needs of qualified technical personnel, by technical areas, taking into account the functions performed and the missions assigned. The Aeronautics or Civil Aviation Authority of the XXXXX State, through the different technical departments and Human Resources, will be in charge of identifying the work areas and the phases to be carried out in this analysis. To this end, individual studies will be carried out, which will include the following phases:

- A. Presentation of information and processing.
- B. Comparison and consolidation.

According to the specific resources that each area must present for the analysis, there are five areas in which we will carry out the study and they are detailed below:

1. Analysis of the Surveillance plan.
2. Analysis for Certification, Authorization, or Approval.
3. Training analysis, training, and other personnel events.
4. Analysis and development of elaboration and amendments of Regulations and other documents.
5. ***Analysis of activities related to safety management and related tasks in the ICAO Online Framework (OLF).***

From the analysis of each of the five areas, we will obtain the "Analysis of the amount of current human resources versus current and proposed workload" to obtain the necessary personnel per area to cover the demand.

II. DEFINITIONS AND ABBREVIATIONS

1. **VHN** : Value of Hours Needed.
2. **VHEI** : Effective Value of Hours for an Inspector.
3. **CIND** : Number of Inspectors needed to cover the demand of the department.

III. OBJECTIVE

Perform an analysis of the technical areas of the CIVIL AVIATION AUTHORITY to obtain objective information that can be registered, processed, and channeled for decision making and dispositions that seek to improve and increase the performance of the departments (Directorates) and thus be able to comply with national and international requirements.

IV. SCOPE

This analysis applies to all technical areas of the Civil Aeronautics Authority, taking into account information from the surveillance plan, a **5-year** study of certifications and issuance of authorizations for the period covered by the analysis, review of ICAO certification requirements (in applicable areas), personnel training for the aforementioned period and attendance to seminars, workshops, lectures and forums, all with a view to perform the analysis, but taking into account the latest reforms to the documentation set forth in the legal basis of this document.

V. RESPONSIBILITY

It is the responsibility of all technical areas (OPS, AIR, PEL, AGA, ANS **and AIG**) to carry out the calculation of Inspectors in each specialty to fulfill their responsibilities.

- Surveillance Plan and all activities inherent to the area.
- Training,
- Updating of regulations and **evaluation of proposed amendments to ICAO annexes.**
- **Certification processes, approval of manuals and operational documents, issuance of authorizations and licenses,**
- **SSP-related activities, safety analysis activities,**
- Processing of audit information and **OLF work (self-assessment update, CAPs elaboration, compliance checklist filling, gap reporting, etc.).**
- Elaboration and **updating of procedures** and technical guides,
- Elaboration of reports on operational surveillance controls, etc.,

This should also include holidays, vacations, **average sick days** and other activities involving inspectors and personnel in general, both inside and outside the country).

VI. OTHER REFERENCE DOCUMENTS:

Legal Basis:

The following are documents that can serve as an example:

- Civil Aeronautics Law
- Inspectors' manuals for each technical area (AGA, ANS, OPS, PEL, AIR, etc.).

ICAO documents:

- Doc. 8335
- Doc. 9760
- Doc. 9734

Note: It is important that before applying this methodology, each technical area establishes the time criteria for each activity in each technical area inspector's manual.

PHASES OF NEEDS ANALYSIS BY DEPARTMENT

PHASE I: Presentation of information and Processing.

1) Analysis of the surveillance plan. Safety surveillance plan for each department.

A. Presentation of the information:

The Surveillance plan of each department is carried out by the personnel of the department and the number of human resources (chief and inspectors) that the department has. The strategy to follow will be to execute the operational surveillance plan for air navigation service providers, airport operators, **commercial air operators, agricultural, aerial works etc.**, approved maintenance organizations and ancillary services depending on the technical departments under analysis. The submission of the information has to be done by filling out format 1 section B of this procedure.

In the activity field, the types of inspections that are planned for the period under study should be entered, such as the following inspections:

- Scheduled Inspections
- Unscheduled Inspections
- Follow-up inspections if applicable
- Preparation of discrepancy reports
- Follow-up and closure of discrepancies

NOTE: The times for Surveillance of foreign stations and maintenance organizations, as well as surveillance of foreign operators, should be established.

B. Processing

Considering the information presented depending on the area under analysis, proceed to perform the respective calculations, in section B of the Man-Hours Form necessary to comply with the FORM-XXXXX activities, multiplying the fields of days, hours and personnel to obtain the total sum of hours.

2) Analysis for Certification, Authorization or Approval *and continued certification.*

In the case that the department under analysis performs certification and approval processes of facilities related to the aeronautical area, the FORM-XXXXX - section C must be completed. A period of 5 years must be considered *regarding the approximate time required to perform certifications of air operators, maintenance organizations, airfields, training centers, etc.*

A. Presentation of information:

This type of activities affect or could affect the conditions in airport operators, aircraft operators and auxiliary services, for this analysis all activities of this type that were performed in the period under analysis will be considered, as for example we can mention:

- Certification of airports and heliports.
- New airport installations.
- Installation of communication towers and antennas.
- *Inclusion of aircraft to the fleet*
- *Approval of new stations or routes*
- *Approval of new facilities as required.*
- *Expansion of OMA capabilities*
- *Approval of amendments to approved manuals (MEL, MP, MGO, Runway analysis, etc.).*

B. Processing

Based on the information presented in section C, proceed to the analysis of the number of man-hours required to comply with the certification activities and approvals related to the area of analysis, completing the fields of days and personnel, to perform the respective multiplications and thus obtain the total number of man-hours in the period under analysis. For example, the calculation in Table 1 of the man-hours needed to comply with certification requirements in the airfield department should consider over a 5-year period how long each activity would take during an airport certification process.

Table 1: Man Hours Needed

Activity <i>AOC Certification</i> <i>In optimal circumstances, with an operator who knows the regulations, not complex, with experienced personnel and adequate budget.</i>	Days	Personnel	Hours	Total of Hours
Phase 1 and 2 of the process	15-20	5	7	525-700
Phase 3 of the process	60-70	5	7	2100-2450
Phase 4 of the process	30	5	7	1050
Phase 5 of the process	3	5	7	527
			Total	4727

3) Training analysis, trainings, and other personnel events.

As part of the training program of the personnel that integrate the department under analysis, the participation or attendance of the chief and inspectors is scheduled annually as established in the training program.

A. Information Presentation

The department under analysis plans, in accordance with its instruction program, the activities focused on improving and strengthening the knowledge of its personnel. For this analysis, everything that is included in the training program will be taken into account by completing the FORM-XXX section D. form, such as, for example:

- Initial trainings
- Recurrent training
- Specialized training
- **Emergent trainings, etc.**

B. B. Processing

Considering the training information in the FORM-XXX-section D form, proceed to perform the respective calculations in the fields days, personnel and hours to obtain the result of the analysis of the number of man-hours required for training and qualification.

4) Analysis in the elaboration and amendments to regulations and other documents

To comply with amendments to regulations with respect to ICAO annexes and other documents, it is necessary to plan the time required for personnel to make the necessary modifications to these documents. This analysis will be performed for a planned study period, so it is intended to obtain an average of the time required and available to perform these tasks.

The updating of technical guides and procedures in regular periods should be considered, whether due to changes in technology, updates or changes in regulations or industry standards.

5) Analysis of Safety Management Activities and related tasks in the ICAO Online Framework (OLF).

- **EFOD**
- **Completion of CAP (when the state has been audited or received an ICVM in a period not exceeding 5 years)**
- **Completion of the Self-assessment (the self-assessment should be carried out in 3-year periods according to the work plan agreed with the NCMCs) as appropriate or as required by the State.**
- **Elaboration and collection of auditable evidence,**
- **Initial evaluation and validation of the information to be published in the OLF.**
- **review of the Compliance Check list (CC)**
- **data collection for risk assessment**
- **Data analysis of safety information**
- **Document development**
- **SSP coordination meetings, among others.**

A. Submission of information:

Section E of the FORM-XXX form should be filled out, where it should detail in the activities field those tasks that are required to be planned, in addition to identifying the hours needed to perform each task and how many people are required in its fulfillment.

B. Processing

Considering the information presented on the development of amendments to regulations and other documents, the calculation of multiplying the hours established by the number of people to perform these tasks should be made to obtain the total hours for each task.

Phase II: Comparison and Consolidation

Considering the information presented in Phase I, we proceed to analyze the availability of man-hours. The fields shown in Table 5 must be completed in Section F of the FORM-XXX form.

Table 2: Man hours Available in the Department

Personnel	Days available	Available Hours	Working Hours I**	Supervision tasks	Working Hours II	Factor (%)****	Effective Hours
Head	234	8	1872	280	1592	80	1353.20
Inspector*	234	8	1872	----	1872	80	1591.20
Total							2944.40

The number of rows should be entered based on the number of inspectors in the technical department under analysis.

** This is the ratio of available days (excluding vacations and holidays) to available hours.

*** Supervisory duties will be 30% of the working hours that the area manager requires to ensure that the inspectors in charge of the area perform their duties.

**** The factor is an **80/20** ratio, **80** is the percentage of time available to fulfill the activities in the period.

A comparison is made of the data obtained in Phase I. Table 6 will group the results obtained in Phase 1 to calculate the total hours required, which must be completed in section G of the FORM-XXXX form to proceed with the analysis of the availability of man-hours.

Table 3: Total of Hours Needed

Activity	Factor	Total hours
1) Surveillance Plan Analysis	(+)	
2) Analysis for Certification, Authorization, or Approval	(+)	
3) Analysis of staff training, education, and other events		
4) Analysis and development of amendments to regulations and other documents		
5) Analysis of activities related to safety management and related tasks within the ICAO Online Framework (OLF).		

Total Phase 1	=	
Man-hours available in the department	(-)	
TOTAL DE HOURS NEEDED (VHN)	=	

ANALYSIS OF THE PERSONNEL REQUIRED TO MEET THE DEMAND OF THE DEPARTMENT UNDER STUDY.

Obtaining the value of "Hours Needed", proceed to complete section H of Form s-FORM-007 with the result of the following operation:

$$CIND = \frac{VHN}{VHEI} = (\# \text{ de Inspectors})$$

Where:

VHN: Value of Hours Needed.

VHEI: Value of Effective Hours for an Inspector was calculated in the table "Man-hours available in the Department Section F" (i.e., calculated for an inspector working 8 hours per day, 234 working days and with a performance of **80%**) (this data would change according to what each State has established).

CIND: Number of Inspectors needed to cover the demand of the department.

This formula indicates whether the department under analysis has sufficient personnel to meet the demand of the department. Likewise, if the result of the calculation requires the hiring of new inspectors, the Head of the department must perform the calculation by area of specialty of the inspector to be hired.

VII. ATTACHMENTS

Attachment 1: FORM-XXXX: Man-Hour Form

Attachment 2: Procedure Flowchart

VIII. APPROVAL

**Executive Director
Civil Aviation Authority**