



International Civil Aviation Organization

North American, Central American and Caribbean Office (NACC)

GREPECAS CAR Project D – ATN infrastructure in the CAR Region and its ground-ground and ground-air applications

Santo Domingo, Dominican Republic, 27 September 2013

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- Agenda Item 2: ATN Infrastructure in the CAR Region and its Ground - Ground and Ground – Air applications**
2.2 Initiate Plan for an IP ATN CAR backbone network configuration

IDENTIFICATION OF TRAINING NEEDS IN AMHS IMPLEMENTATION

(Presented by ICAO)

SUMMARY	
This paper presents ICAO general guidance for reviewing and identifying training needs for the implementation, operation and maintenance of the AMHS Systems.	
References:	
<ul style="list-style-type: none">• Doc 7192, Part E2, <i>Air Traffic Safety Electronics Personnel (ATSEP)</i>• First Meeting of Civil Aviation Training Centres in the NAM/CAR Regions (NAM/CAR/CATC/1), ICAO NACC Regional Office, Mexico City, 27 to 30 August 2013	
Strategic Objectives	<i>This working paper is related to Strategic Objectives: A. Safety – Enhance global civil aviation safety C. Environmental Protection and Sustainable Development of Air Transport</i>

1. Introduction

1.1 Human factor and the necessary training is fundamental for developing the competencies required to efficiently and effectively manage, operate, design, implement, maintain and support any CNS/ATM System. Some States had implemented a comprehensive programme of training, certification, and in some cases, licensing while other States were still looking for appropriate guidance.

1.2 Since the 11th Air Navigation Conference (2003), due to the needs related to training, qualification and competency and to address to uniform requirements on a worldwide basis, the training requirements for the personnel involved in the maintenance and installation of CNS/ATM systems; ICAO developed a new Part of the ICAO *Training Manual*, (Doc 7192) for the Air Traffic Safety Electronics Personnel (ATSEP). Doc 7192 should be used in conjunction with Annex 10 — *Aeronautical Telecommunications* and associated manuals, as well as with the training required for these systems.

1.3 The constant evolution of CNS/ATM technology brings new challenges to air navigation, such the case of the new systems like the AMHS. Training requirements have to be adapted regularly.

2. Discussion

Air Traffic Safety Electronics Personnel (ATSEP)

2.1 A Contracting State, or the organization authorized by the State authority providing CNS/ATM services, should establish methods for determining job competencies. All personnel directly engaged in operation, maintenance and installation activities of CNS/ATM systems should be qualified for their job functions. ATSEP is the ICAO-recognized terminology for personnel involved in the operation, maintenance and installation of a CNS/ATM system.

2.2 State regulatory norms should define the requirements with respect to age, knowledge, experience, skill and attitude which determine ATSEP competency. Chapter 4 of ICAO Annex 1 — *Personnel Licensing*, however, contains Standards for other personnel, and States should consult them when establishing their requirements.

2.3 In order to cover the various backgrounds of trainees and to ensure training standardization worldwide, it is recommended that training be divided into multiple levels as follows:

- *Basic training*: Fundamental knowledge and skills appropriate to the discipline to be pursued in the CNS/ATM environment.
- *Qualification training*: Job-category-related knowledge and skills appropriate to the discipline to be pursued in the CNS/ATM environment. Various applications have been identified that apply to the five corresponding discipline qualifications of communication, navigation, surveillance, data processing and power supply. A General AMHS concept is considered under the communication discipline.
- *System and equipment rating training (also referred to as “Specific training”)*: System and equipment knowledge and skills leading to recognized competency, for example specific AMHS System courses. It also includes on-the-job training (OJT), which is the practical integration of previously acquired knowledge and skills, under the supervision of a qualified on-the-job-training instructor (OJTI), in an operational environment.
- *Continuation training*: Training given to personnel, designed to augment existing knowledge and skills and/or to prepare for new technologies. It includes refresher, emergency and conversion training. Refresher and emergency training are sometimes called “recurrent training”.
- *Conversion training*: Designed to provide knowledge and skills appropriate to a change in either job category (new discipline or new type rating), environment (new procedures) or system (system upgrade or change).
- *Developmental training*: Training designed to provide additional knowledge and skills demanded by a change in the job profile, e.g., system monitoring and control, training instructor, installation or engineering technologist, or any other career development.

AMHS COM Centre Training Guidelines

2.4 In April 2012, version 1.0 of the EUR AMHS COM Centre Training Guidelines was published with the purpose to provide information and guidance on the training and expertise required for personnel involved in the operation and maintenance of a COM Centre, defining training process and specify training guidelines in order to have a common level of training for staff that operates and maintains COM Centres with AMHS capabilities.

2.5 By means of such training, it is expected that COM Centre staff will obtain the appropriate skills to specify, evaluate, operate and maintain an AMHS system in an appropriate manner and consequently provide harmonised, homogenous and consistent AMHS services.

2.6 The document is applicable to all AMHS involved personnel, e.g. System Supervisors, Operators, Maintainers, Engineers, End Users, etc. (the actual structure, naming and responsibilities of the personnel, varies among ANSPs).

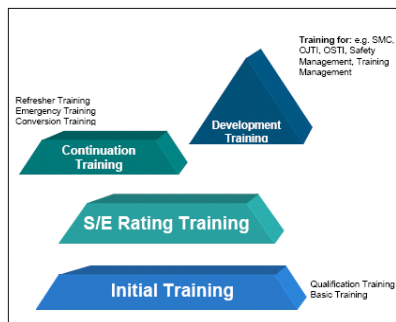
2.7 These guidelines consider the following concepts:

1. AMHS training could be distinguished as covering three major activities of AMHS deployment:
 - a. AMHS Specification and Testing
 - b. AMHS Installation and Technical Support
 - c. AMHS Operation and Supervision
2. AMHS operational management is structured in the following macro areas (competences)
 - Fault management;
 - Configuration management;
 - Accounting management;
 - Preventive maintenance;
 - Performance management;
 - Security management
3. In practical terms, the staff involved in the above tasks is performing the following functions:
 - a. *AMHS System Administration/Supervision* (ASS)
 - b. *AMHS System Operation* (ASO)
 - c. *AMHS System Technical Support (Maintenance)* (ASM)
 - d. *AMHS End System Operation* (AEO)

Depending on the organizational structure of each ANSP, the same personnel may be performing one or a combination of the above functions.

Competences \Functions	ASS	ASO (24hrs)	ASM	AEO
Fault management	X	X	X	
Preventive Maintenance			X	
Configuration management	X	X	X	
Accounting management	X			
Performance management	X	X	X	
Security management	X		X	
Operation	X	X		X
Basic UA Configuration and/or H/W Monitoring	X		X	X

2.8 Similarly, these guidelines provide the qualifications and expected knowledge needed for each profile/function and responsibilities to be achieved by each profile. And finally the guidelines propose, based on the ICAO Training Manual ATSEP, 6 training types/levels with its objectives and proposed syllabus.



2.9 A baseline training list is proposed for AMHS staff to reach operational level:

- a) Common Basic Communications Training (C.1)
- b) Common AMHS general training (C.2)
- c) COM Centre Operation (O.1)
- d) AMHS COM Centre Operation (O.2)
- e) Use of UAs (O.3)
- f) System Maintenance – H/W (M.1)
- g) System Maintenance – S/W (M.2)
- h) COM Centre Supervision (S.1)
- i) System Monitoring and Control (S.2):

Module Name	Type	ASS	ASO	ASM	AEO
C.1	Basic training	X	X	X	
<u>C.2</u>	Qualification training	X	X	X	X
<u>O.1</u>	Qualification training	X	X		X
<u>O.2</u>	System/equipment competence training	X	X		
<u>O.3</u>	System/equipment competence training		X		X
<u>M.1</u>	System/equipment competence training			X	
<u>M.2</u>	System/equipment competence training			X	
<u>S.1</u>	System/equipment competence training	X	X		
<u>S.2</u>	System/equipment competence training	X			

Table – AMHS training modules

2.10 The following considerations are to be taken in consideration by each ANSP when planning the AMHS training:

- a) ANSPs should establish their AMHS Training Plan based on an analysis of their particular training needs and operating practices;
- b) similar to any ANS system, an AMHS System is subject to maintenance in line with the strategy and processes set out by the ANSP, so that the performance, reliability, availability and maintainability requirements are met;

- c) maintenance responsibilities should be clearly defined and assigned, personnel should be trained accordingly and procedures of cooperation between the operation and the maintenance entities, when different, should be in place; and
- d) when some levels of maintenance are assigned to third parties, the responsibilities on each side including training/qualification profiles for the third party personnel should be specified in the appropriate agreements.

First Meeting of Civil Aviation Training Centres in the NAM/CAR Regions (NAM/CAR/CATC/1)

2.11 The NAM/CAR/CATC/1 Meeting met with the purpose of reviewing the progress achieved with training and human resources planning in the NAM/CAR Regions, identifying the training needs and its priorities and the existing training offer by the Regional Training Centers. The NAM/CAR/CATC/1 Meeting agreed on the creation of a Working Group denoted Civil Aviation Training Centres Working Group (CATC/WG), to be a technical supporting body to the Directors of Civil Aviation on training matters.

2.12 In one of its conclusions, the support of all the Air Navigation implementation bodies is requested for identifying training needs to be considered in the evaluation on training needs for 2014 and the Regional CAR training Plan 2014-2018.

3. Suggested Actions

3.1 The Meeting is invited to:

- a) review the training proposal for AMHS staff as described in document EUR COM AMHS Training Guidelines Version 1.0;
- b) identify the necessary courses or training needs on AMHS;
- c) include a task for the AMHS Task Force for the periodic identification of AMHS training matters; and
- d) report the CATC/WG the needs on AMHS Training.