<u>*International Civil Aviation Organization*</u>

**Twenty Seventh Meeting of the Communications/
Navigation and Surveillance Sub-group (CNS SG/27)
of APANPIRG**

Bangkok, Thailand, 28 August – 01 September 2023

Agenda Item 11:   Capacity Building, including Human Factors and Air Traffic Safety
Electronics Personnel (ATSEPs) related training

ATSEP COMPETENCY BASED TRAINING IN ATMB AND CAAC

(Presented by China)

SUMMARY

This paper provides information on the Air Traffic Safety Electronic Personnel (ATSEP) competency-based training in ATMB and CAAC, and presents the development of ATSEP training by the example of training organization in Southwest ATMB.

1.   INTRODUCTION

1.1   Personnel involved in the maintenance and installation of CNS/ATM systems should be trained to uniform requirements on a worldwide basis. ICAO Published 2nd Edition of Doc. 9868 *Procedures for Air Navigation Services* – Training in 2015, Items on Competency-based training and assessment for Air Traffic Safety Electronic Personnel (ATSEP) are included in Part Ⅳ.

In 2017, ICAO Published Doc. 10057 *Manual on ATSEP Competency Based Training and Assessment,* which provides guidance to ANSPs and training organizations on the development of ATSEP Competency Based Training and Assessment Programs. ICAO Doc 7192 Part E-2 *ATSEP Training Manual* has expired since 2020.

1.2   A series of norms have been specified by CAAC on aeronautical telecommunication personnel licensing and training since 2009. ATMB published *ATM/CNS Personnel Training Construction Scheme* and *ATM/CNS Personnel Competency Assessment Guidance Material* in 2021, In order to further standardize ATSEP training and competency assessment.

1.3   Southwest ATMB pays high attention to ATSEP Competency Based Training, and systematically participated in the development of the above-mentioned training construction scheme and competency assessment guidance.

2.   DISCUSSION

CAAC ATSEP Qualification and Competence Building

2.1   Since 2009, a series of norms have been specified by Air Traffic Regulation Office of CAAC on aeronautical telecommunication personnel licensing and training, which include 2 CCAR Regulations, 4 Aviation Procedures and 2 Working Manuals.

2.2   According to these regulations, the management and implementation of ATSEP Qualification and Competence Building adopts a **three-tier** structure: The Civil Aviation Administration of China(CAAC) implements unified management of Civil aviation telecommunication personnel license and ATSEP training; Seven Regional Civil aviation Administrations are responsible for organizing, coordinating and supervising the ATSEP Qualification and Competence Building in corresponding region; ANSPs are specifically responsible for their daily management of license, training and competence building.

2.3   It is mandatory for the aeronautical telecommunication personnel in China to get license before working independently. There are three majors for civil aviation telecommunication personnel license in china: communication, navigation and Surveillance, with totally 16 types of technical position.

2.4   Aeronautical telecommunication personnel in China are required to accomplish no less than 240 hours of training that includes basic training and qualification training. The knowledge, skills and attitude gained in this phase is a prerequisite to licenses. In addition, at least 40 hours on-job training per year should be completed in order to meet the competency requirement according to aeronautical telecommunication training management regulations.

2.5   Aeronautical Telecommunication Personnel Training Organizations are approved by Air Traffic Regulation Office of CAAC since 2015, in order to standardize ATSEP training and improve the job Competence Building.

ATSEP Competency Based Training in ATMB

2.6   ATMB published *ATM/CNS Personnel Training Construction Scheme* and *ATM/CNS Personnel Competency Assessment Guidance Material in 2021,* In order to further standardize aeronautical telecommunication personnel training and competency assessment.

2.7   New recruits of ATM/CNS accept Initial Training at first，which include ATMB Safety Culture, Discipline, Human Factor，Physical Training, etc. ATSEP training follows，and is divided into 3 phases, those are Pre-Job Training, Capability Maintain and Enhance Training (On-Job training) and Development Training.

2.8   Pre-Job training is intended for new employees or those who are ready to get certification or license, as well as the ability to work independently as ATM/CNS Personnel. Basic Training and Qualification Training are included in this part.

1) Pre-Job Basic Training is designed to give an overview of overall CNS/ATM technical and operational environment, as well as the overview of key systems and equipment.

Pre-Job Basic Training Course for CAAC CNS Personnel was published nationally in 2015, and republished in 2020. The general requirement for qualification was standardized, and the designated instructors were trained collectively. The basic training course takes 120

hours，and is divided into six teaching modules: general introduction of Civil Aviation and ATM fundamentals, Regulations of Civil Aviation, Communication, Navigation, Surveillance and Power supply.

2) Pre-Job Qualification Training provides the ATSEP with job-category-related knowledge and skills needed in the CNS/ATM environment. Personnel gets the technical theory, equipment knowledge, on-duty operation, safety knowledge and other related knowledge and skills necessary for his work position through Qualification Training.

Trainees can work independently only after completing the qualification training, obtaining the civil aviation telecommunication personnel license and passing the competency assessment for the corresponding job position.

2.9   On-Job training is intended for those who authorized to work independently, and need to maintain or enhance knowledge and ability to meet capability for the corresponding job position. General Training, ATM/CNS Technical Theory Training and Specialized Technical Training closely related with CNS equipment and systems are included in this part.
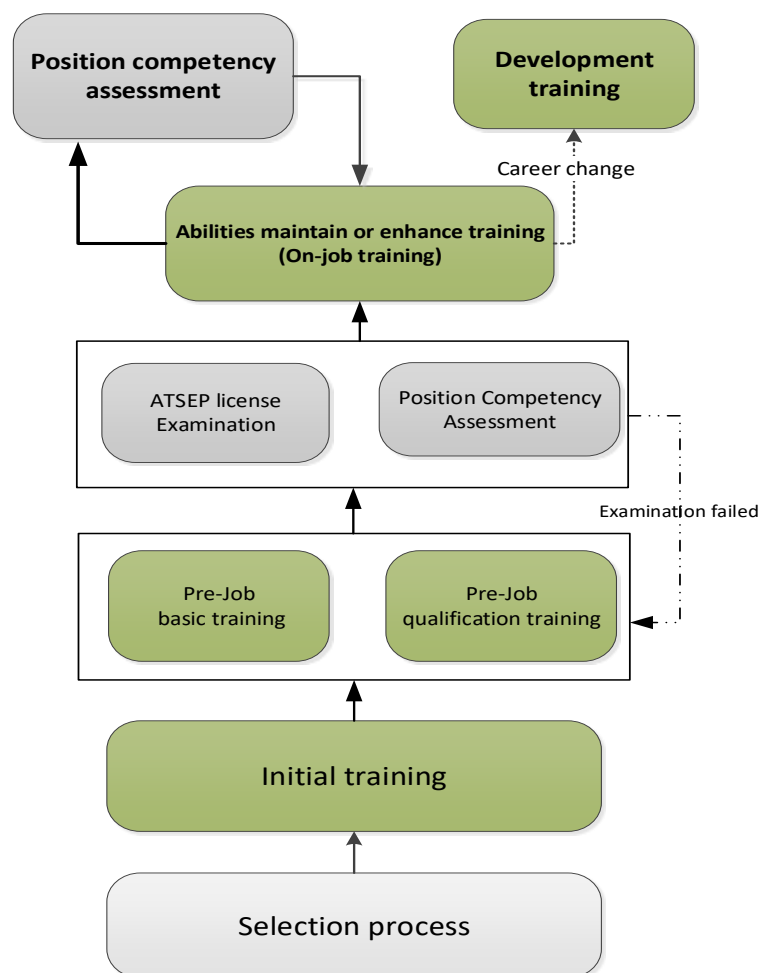
1) General Training refers to job-related regulations and procedures, human factors, safety management and other content.

2) ATM/CNS Technical Theory Training refers to the basic theory and knowledge of electronic information, communication, network, power supply, etc. which should be possessed in the professional work of civil aviation communication, navigation and surveillance domain.

3) Specialized Technical Training refers to the technical theory and operational skills of air traffic control equipment or system, which divided to 26 CNS equipment/system training directions such as VHF, HF, VCS, SSR, etc. Every training direction include classroom-based theoretical training and on-site system/platform training, and split to 3 different levels of junior，intermediate and senior.

2.10   Development Training focuses on the development of additional competencies required by a change to or an evolution of an ATSEP's profile, such as instructor training，ATSEP inspectors training, Civil Aviation safety management personnel training, etc.

2.11   Syllabuses with knowledge modules for all the above training phases are provided in the Appendix of *ATM/CNS Personnel Training Construction Scheme 2021*. *It nearly covers all* knowledge modules about technical theory and CNS equipment/system operation.

2.12   ATMB carry out CNS personnel qualification and ability evaluation interview since 2016, and published *ATMB CNS personnel Qualification and Ability Evaluation Manual* in 2022, with evaluation outlines for 12 different equipment/systems in the appendix. Result of qualification and ability evaluation interview will be recorded into personnel technical archives, and provide basis information for job competency assessment.

2.13   The general process of ATMB ATSEP training and competency assessment is shown in the following figure.

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┌──────────────────────┐              ┌──────────────────────┐
│ Position competency  │              │    Development       │
│     assessment       │              │     training         │
└──────────────────────┘              └──────────────────────┘
                                                 ▲
                                          Career change
┌──────────────────────────────────────┐
│  Abilities maintain or enhance training│
│        (On-job training)               │
└──────────────────────────────────────┘

┌──────────────────────────────────────┐
│  ┌──────────────┐  ┌────────────────┐ │
│  │ ATSEP license│  │Position Competency│
│  │ Examination  │  │  Assessment    │ │
│  └──────────────┘  └────────────────┘ │
└──────────────────────────────────────┘
                          Examination failed
┌──────────────────────────────────────┐
│  ┌──────────────┐  ┌────────────────┐ │
│  │   Pre-Job    │  │   Pre-Job      │ │
│  │basic training│  │qualification   │ │
│  │              │  │  training      │ │
│  └──────────────┘  └────────────────┘ │
└──────────────────────────────────────┘

┌──────────────────────────────────────┐
│          Initial training             │
└──────────────────────────────────────┘

┌──────────────────────────────────────┐
│          Selection process            │
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ATSEP Training in Southwest ATMB

2.14   Southwest ATMB is one of seven Regional Air Traffic Management Bureaus in China. Southwest ATMB Training Center is the first approved Aeronautical telecommunication personnel training organization of CAAC. The paper *DEVELOPMENT OF ATSEP TRAINING IN SOUTHWEST ATMB OF CHINA*（CNS SG/20－WP/24）was submitted by China in 2016. Over 7 years, ATSEP training and competency assessment are more closely combined in southwest ATMB, and more competence-based training courses have been developed.

2.15   10 standard On-Job training courses for ATM/CNS personnel have been developed since 2017, include ground-air communication, ground-ground communication, ATC surveillance, Navigation, ATC data process, CNS power supply, etc. Each course includes classroom-based theoretical training and on-site system/platform training. A junior or intermediate On-Job course always takes one or two weeks, while a senior course takes at least two weeks，all these courses end with job competency assessment or strict examination.

2.16   Southwest ATMB training center has Completed 49 internal ATSEP training courses from 2018 to 2022, which cover 1500(person-time) CNS personnel. The training center also outputs 31 ATSEP training courses to other ANSPs and airports at the same time, which cover 786 external trainees.

Those output courses include ATSEP pre-Job training, on-job training and develop training such as Instructor training course, CNS Personnel Competency Assessment training course, etc.

2.17   Relevant ATM/CNS equipment platforms are given to the trainees to gain the practical skills, which cover all types of Southwest ATMB CNS system/equipment in use. There are 13 communication training platforms, include 12 channels VHF, Voice Communication Systems，Multiplexers, Telegram System, IP Routing & SDH equipment and the Virtualization training system; 7 navigation training platforms, include ILS, DVOR/DME training equipment；5 surveillance training platforms，include ADS-B equipment and Mode S SSR test platforms; and 3 ATC Test and Verifying Systems. These platforms have achieved interoperability, and fully simulate the real application environment, while 11 more Platforms of the latest model are under construction and are expected to put into use by 2025.

2.18   Both full-time and part-time instructors are employed after assessment in southwest ATMB. Besides, experienced trainers from other Regional ATMB, research institutes, universities, and facilities suppliers are invited to give lectures. Multi-media classrooms, operation training rooms, cafeteria, dormitory are provided for up to 120 trainees at the same time.

3.   ACTION BY THE MEETING

a) The meeting is invited to note the information in this paper; and

b) Encourage CNS/ATM training activities and cooperation among APAC states.

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